ENGINEERING NEWS-RECORD

Every piece of metal is grounded in this building p.34

A McGRAW-HILL PUBLICATION

STEVENS RICE GS N
UNIVERSITY MICROFILMS IN
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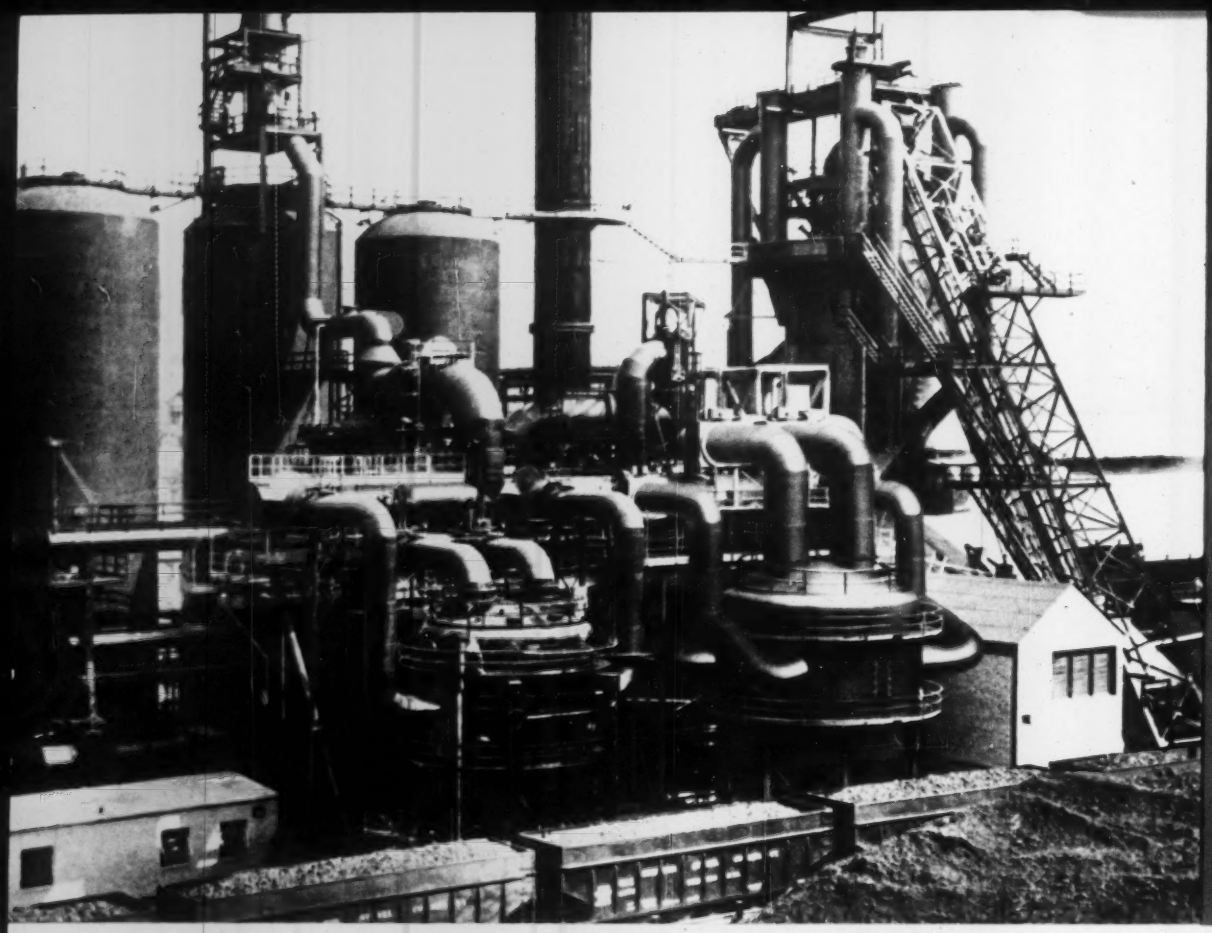
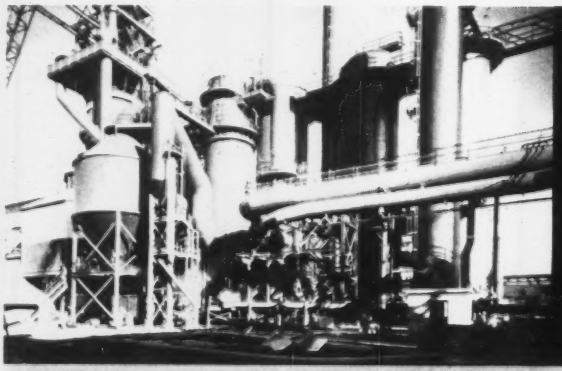


COMPLEX PLATE CONSTRUCTION FOR THE STEEL INDUSTRY

by Pittsburgh-Des Moines

PDM
STEEL PLATE WORK

The experience of more than 65 years in exacting plate fabrication qualifies PDM for the steelmaker's large and intricate construction projects. PDM's broad resources cover the complete job—in the case of blast furnace construction, the shell, hot blast stoves, dust catcher, ducting, piping, fittings, walkways and all accessory equipment are included in a single responsibility and guarantee of satisfaction. Whether your plate fabrication requirements are in the steel, chemical, petroleum or other industries if first-quality work is first in importance, *get a quotation from Pittsburgh-Des Moines.*



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We've got these...and those in building hose!

GOODYEAR INDUSTRIAL PRODUCTS

-Specified

FLEXSTEEL Air Hose for roughest mine, quarry and construction service

A Soft, tan-colored cover to resist cutting, gouging and abrasion

B Superstrong, braided steel wire and cord reinforcement to handle high pressures, resist crushing and kinking

C Special synthetic seamless tube withstands both heat and oil

GOODYEAR INDUSTRIAL PRODUCTS

-Specified

ORTAC HOSE for universal use

A Extra-tough cover resists weather, oil, sun, abrasion

B Vertical braids of high-tensile rayon cord for exceptional strength with great flexibility

C Tube that resists oil, gasoline, solvents, air and water

ORTAC (Oil-Resistant Tube and Cover) is available in long, continuous lengths in sizes from 3/16" to 1½ i.d.

GOODYEAR INDUSTRIAL PRODUCTS

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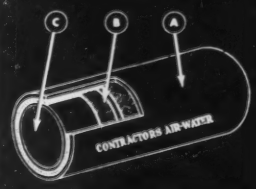
Contractor's Air-Water Hose for Construction Work



A Rugged cover that's both abrasion- and sun-resisting—continuously print-branded for easy identification

B Extra-tough braids of high-tensile rayon cord to handle pressures, resist crushing or kinking

C Special nonporous tube resists alkali or slightly acid water

GOODYEAR INDUSTRIAL PRODUCTS

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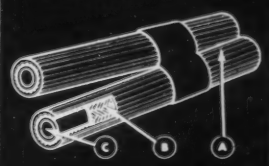
SPIRAFLEX Welding Hose for oxyacetylene welding, cutting, chipping



A Corrugated cover for firm grip and long wear —one line red, the other green for hook-up identification

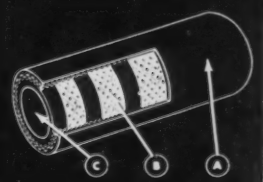
B Superstrong rayon braid reinforcement

C Nonporous, nonblooming, nonflaking tube

GOODYEAR INDUSTRIAL PRODUCTS

-Specified

FLEXSTEEL Steam Hose for high pressures and temperatures in severe service



A Extra-tough cover resists heat, aging and abrasion

B High-tensile braided steel wire reinforcements for maximum strength with flexibility

C Extremely heat-resistant tube

HIGH pressure or low—for air, water, steam, oil or gas—the smart choice in hose is Goodyear.

For Goodyear hose is built for builders: Its cover is super-tough to resist rough handling. It's heavily muscled with high-tensile cord or steel reinforcements. It resists kinking or crushing. Yet it's flexible and easy to maneuver.

Wouldn't it pay you, then, to insist on Goodyear quality on your next hose-using job? Check with your Goodyear Distributor for details on the special line that's designed to meet every contracting need. Or write Goodyear, Industrial Products Division, Akron 16, Ohio.

IT'S SMART TO DO BUSINESS with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."

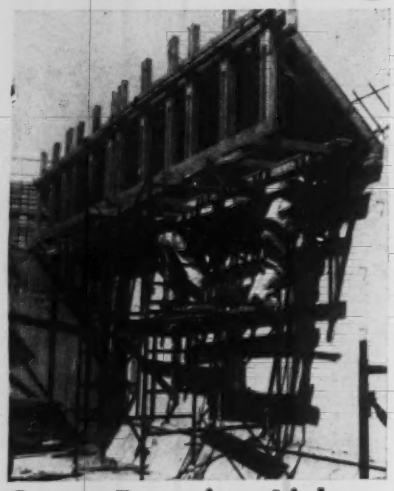
the big name in hose is

GOODYEAR

Flexsteel, Ortac, Spiraflex—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

THE GREATEST NAME IN RUBBER

"Y" Wall Forming

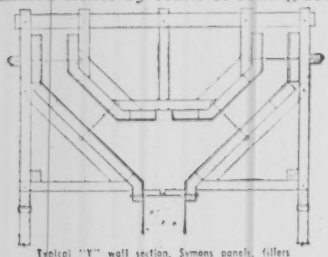


Gang Forming Licks "Y" Wall Problem

Pays Off in Quality Pours, Speed and Reduced Costs

2,665 lineal feet of "Y" walls and half "Y" walls, with 16'-9" high walls on a tank addition to a sewage treatment plant—that was the pouring problem faced by contractors, Wander & Mason of Worthington, Ohio. They solved the problem by pouring the walls in three lifts with the forms ganged for the final "Y" and half "Y" pours.

On the "Y" walls Symons standard panels, fillers, inside and outside bay corners, which were eight feet long, were ganged in 16-foot sections and handled either by crane or rolling scaf-



Typical "Y" wall section. Symons panels, fillers and bay corners were gang formed in sections.

folding. One 16-foot outside section was stripped, moved to the next wall section and reset by three men in 20 minutes.

Symons Forms, Shores and Column Clamps can be rented with purchase option. Information on Symons products is available upon request.

Symons

SYMONS CLAMP & MFG. CO.
4265 Diversey Avenue, Dept. M-8
Chicago 39, Illinois

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ENGINEERING NEWS-RECORD

EIGHTY-FIFTH YEAR OF PUBLICATION

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IT'S THE 25-D—all over the country

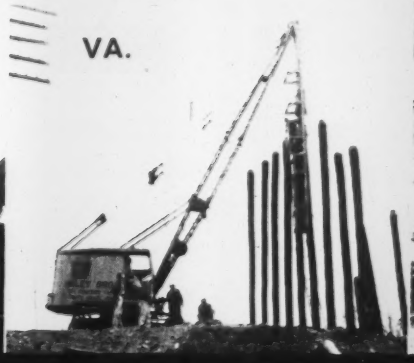
A still finer workhorse in the 3/4-yard field!

Maine, Florida, Indiana, Louisiana and on west!—the 25-D Northwest is rapidly proving itself the finest, most versatile piece of equipment in the ¾-yd. field.

If you are considering a ¾-yd. machine, ask about the many advanced features of the 25-D. There's the New Independent High Speed Worm Boom Hoist, driven through Uniform Pressure Clutches; Power Load Lowering on the Hoist Line; longer, wider Crawlers; larger Drums for greater cable capacity; improved Uniform Pressure Swing Clutches; larger Drum Brakes and Clutches and; improvements in many other features that combine to make money.

A Northwest man will be glad to tell you the whole story.

NORTHWEST ENGINEERING COMPANY
1502 Field Bldg., 136 So. LaSalle St.
Chicago 3, Illinois



NORTHWEST

Always Ready to GO

NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

SHOVELS	CRANES	DRAGLINES	PULLSHOVELS	TRUCK CRANES
¾ Yd. to 2½ Yd. Capacity	13-Ton to 50-Ton Capacity	¾ Yd. to 3 Yd. Capacity	¾ Yd. to 2½ Yd. Capacity	25-Ton and 35-Ton Capacity

6 men install 970 feet of Corrugated Metal Pipe in 3 days

In the picture you see sections of 36" diameter, one-half asphalt-coated and paved, Corrugated Metal Pipe, ready for installation on US Route 230 just off the Pennsylvania Turnpike. Lane-Penncarva Inc. supplied 970 lineal feet of this pipe for a storm sewer extension. Six men installed every foot of pipe in three days!

Speed like this was possible because Corrugated Metal Drainage Products are light and easy to handle. Easily loaded, easily trucked and easily installed, they don't have to be babied because steel stands up under punishment that would crack or break other materials. This pipe was made from tough USS Corrugated Galvanized Culvert Sheets. It's doubly protected from corrosion—under the asphalt coating is a heavy, uniform coat of zinc.

Metal culvert sheets make strong, long-life drainage structures. Being flexible, metal culverts deflect under load and gain support from the passive resistance of the compressed soil around them. This is why metal pipe can withstand the crushing weight of deep fill *and* the vibration and impact of heavy loads over shallow fill.

For more information, write for our free booklet, "USS Culvert Sheets"; United States Steel, Room 2801, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

USS is a registered trademark

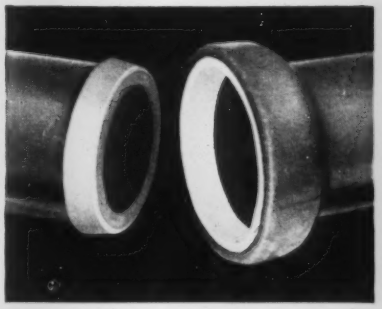
United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel

USS

longer, stronger AMVIT Jointed Clay Pipe prevents infiltration SIX WAYS

Bottletight, Factory-Made Joint of Plasticized Resins of Polyvinyl-chloride gives lower cost-in-place



Engineering standard and specifications for sanitary sewers are written so that both the contractor and the community can obtain the best type of construction.

They limit the amount of infiltration in sewer pipe joints, which, in turn, reduces pumping and treatment plant costs. Amvit* Jointed Clay Pipe was especially designed to achieve best possible results.

1. FACTORY-MADE QUALITY

The Amvit Joint is manufactured from plasticized resins of polyvinyl-chloride. No other combination of materials is used or needed. It is applied on the pipe by a special manufacturing process and delivered to the job site ready for immediate installation.

2. DESIGN PREVENTS LEAKS

The Amvit Joint is a compression type joint based on the ball and socket principle. The material on the spigot end is a convex shape, with the bell end in a concave shape. Simply pushing the pipe together "makes" the joint, keeping the surfaces of the bell and spigot rings in constant compression. Thus, infiltration, exfiltration, and root penetration are prevented.

3. QUICK, FOUL-PROOF INSTALLATION

The joint is on the pipe delivered to the job site ready for immediate installations. No other materials such as caulking, joint compound, hot pots, or ladles are needed to make the Amvit Joint.

4. PERMITS DEFLECTION, ABSORBS SHOCKS

Amvit is made from a plastic which has many characteristics similar to rubber. It is pliable, permitting deflection without leakage. It is resilient, can absorb shocks, and vibration.

5. BETTER FLOW, LESS MAINTENANCE

The design of the joint assures that the pipe is self-centered at all times. This gives perfect alignment and self-cleansing action. Because the joint is really tight, no foreign matter such as dirt, sand, or stones can possibly enter the line.

6. COMPLETE FITTINGS

Amvit is furnished on all standard fittings, as well as pipe. This will permit a uniformly tight line from house to treatment plant.

Amvit Jointed Clay Pipe, in sizes 4" through 24", together with all fittings is available for immediate delivery in the Northeast and Central States.

For more information on how Amvit can help cut your sewer installation costs, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you, for this descriptive folder.

SINCE 1848

AMERICAN

American Vitrified Products Company

CLEVELAND OHIO

* T. M. Registered

PLANTS ACROSS THE NATION . . . Brazil, Indiana • Chicago, Illinois • Cleveland, Ohio • Crawfordsville, Indiana • Detroit, Michigan • East Liverpool, Ohio Fenton, Michigan • Grand Ledge, Michigan • Lisbon, Ohio • Los Angeles, California • Milwaukee, Wisconsin • South Bend, Indiana • St. Louis, Missouri • Whitehall, Illinois

Pick a pickup that's big-truck tough

Chevy's got 'em by the dozen!

The handiest helper you'll ever have is right here—one of these '59 Chevrolet pickups is bound to be just right for your work. It's ready to hop-to-it on your hurry-up chores with the power, the load capacity and the tough components that spell savings in time and money every run. Pick your pickup; then read all about it here:

Save up to 20% on fuel!

Choose any one of Chevy's 5 dashing Fleetside models or 7 handy Stepside models and you can count on extra savings right from the start. Each of these models offers the newly improved Thriftmaster 6 as standard equipment. With a new Economy-Contoured Camshaft, this engine assures up to *10% less fuel consumption*. And in Series 31 and 32, the Thriftmaster can be equipped with a new Maximum-Economy Option* that improves economy by an additional 10%! Or if you prefer a V8 engine, 2-wheel-drive models offer the power-packed performance and short-stroke efficiency of the advanced 160-h.p. Trademaster V8*.

Carry extra-big cargoes

There's room for everything in a '59 Chevy pickup body! Smooth-lined Fleetside models provide big cargo areas in lengths of 78" or 98" and all are a full 6 feet in width. New Stepside models, with handy side running board, offer spacious bodies in 78", 98" and 108" lengths. And each of these new pickups comes equipped with ruggedly built graintight tailgate and long-lasting select-wood floor with steel skid strips.

Haul anywhere with Chevy's new 4-wheel drive

It's the latest thing in 4-wheel drives, now available in either Fleetside or Stepside pickup models. With 2-speed power divider and precision-engineered front axle, it gives nearly twice the torque multiplication and up to *twice* the traction of 2-wheel drives. Powerful traction that digs right in and enables you to haul where you *couldn't* before—through deep mud, snow, swampy areas and up towering grades!

Light loads, big loads, long runs, short hops—whatever you haul and wherever you haul it, you're sure to find the right truck for your business in Chevy's long, strong and handsome line of pickups! The one for you is at your Chevrolet dealer's now. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

**Extra cost.*

No job's too tough for a

MODEL 3104

Max. payload capacity 1,700 lbs.; 78" Stepside body.

MODEL 3154 (4-Wheel Drive)

Max. payload capacity 1,600 lbs.; 78" Stepside body.

MODEL 3134

Max. payload capacity 1,450 lbs.; 78" Fleetside body.

MODEL 3184 (4-Wheel Drive)

Max. payload capacity 1,550 lbs.; 78" Fleetside body.

MODEL 3204

Max. payload capacity 1,350 lbs.; 98" Stepside body.

MODEL 3604

Max. payload capacity 1,500 lbs.; 98" Stepside body.

MODEL 3654 (4-Wheel Drive)

Max. payload capacity 2,850 lbs.; 98" Stepside body.

MODEL 3234

Max. payload capacity 1,800 lbs.; 98" Fleetside body.

MODEL 3634

Max. payload capacity 2,900 lbs.; 98" Fleetside body.

MODEL 3684 (4-Wheel Drive)

Max. payload capacity 2,750 lbs.; 98" Fleetside body.

MODEL 3804

Max. payload capacity 2,800 lbs.; 108" Stepside body.

MODEL 3854 (4-Wheel Drive)

Max. payload capacity 2,700 lbs.; 108" Stepside body.

. . . AND EL CAMINO, TOO!

The year's brightest new idea in trucks, a striking combination of high fashion and husky components, with 1,150-lb. payload capacity and 119" wheelbase. Good looks never carried so much weight!

Chevrolet Truck!

CHEVROLET

NEW... from SEALMASTER

QUALITY PERFORMANCE ECONOMY

The "LP" Pillow Block

- Precision self-aligning one-piece unit. No extra assembly costs for you.
- Malleable housing provides maximum strength with light weight.
- Permanently sealed—pre-lubricated with high grade lubricant.
- Nothing of comparable value in low price field.

"L" & "SL" BEARINGS

"L" BEARING

"SL" BEARING

WRITE FOR BULLETIN 1058

SEALMASTER

BALL BEARING UNITS

SEALMASTER BEARINGS
A DIVISION OF
STEPHENS-ADAMSON MFG. CO.
84 RIDGEWAY • AURORA, ILL.

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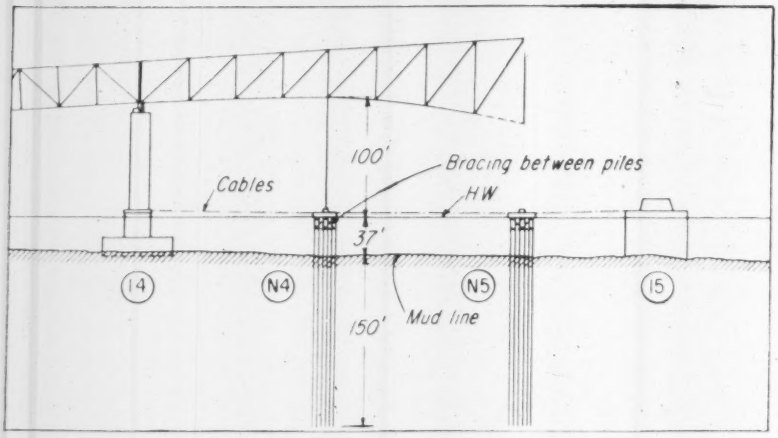

More Collapse Data Needed

Sir—As you say in your editorial of Dec. 18, 1958, p. 100, great credit is to be given to everyone concerned for the prompt and thorough investigation of the falsework failure on the Second Narrows Bridge in Vancouver, B. C.

There is one point that deserves attention from the engineering profession everywhere because of its general importance. The false bent, N4, which carried the erection loads at the time of the collapse, consisted of two steel legs above water, approximately 100 ft high and carried on pile nests of 24 piles under each leg. Between the pile nests and the lower ends of the bent legs were grillage beams in two directions. According to reports, failure of the upper grillage beams caused collapse.

The reports on the failure describe the pile nests as consisting of four rows of six piles each. The piles were 10¾ in. OD. steel pipes filled with concrete. The piles penetrate the water to a depth of approximately 37 ft to the mud line and were driven below the mud line to a penetration of up to 150 ft. In the longitudinal direction, the piles were braced above low water to a depth of about 12 ft from the top of the piles, and each nest of piles was connected by two cables running from Pier 14 to false bent N4, false bent N5 and Pier 15 (see sketch). The reports do not indicate the method used for the stressing of these wire cables.

Two individual piles were test loaded to more than twice the design load prior to erection of the superstructure. The engineering reports dismiss the possibility that the piles caused the collapse.

Temporary supports consisting of piles below water, sometimes of considerable lengths, and steel legs above water are used frequently in the erection of large bridges. The arrangement at Vancouver had a tragic similarity to the temporary supports used on the Charter Oak Bridge at Hartford, Conn., which collapsed during erection in 1941, and to which you referred in your editorial of July 3, 1958, p. 100. The examinations and calculations relating to the pile nests and to the complete assembly forming the temporary support led the Commission's engineering advisers to the conclusion that the pile nests did not cause the collapse.

These calculations are of very great interest to the engineering profession and I feel that they should have been included in the engineering advisers' reports to the Commission as were their calculations on other aspects. Publication of these calculations would assist interested engineers so that we may truly learn from past experiences.

O. Safir
Consulting Engineer
Vancouver, B. C.

For Your Calendar . . .

8th Annual Meeting of the Building Research Institute, Penn-Sheraton Hotel, Pittsburgh, Pa., Apr. 6-8.

National Industrial Conference Board's Seventh Atomic Energy in Industry Meeting, Statler Hilton Hotel, Cleveland, Ohio, Apr. 8-10.

Wisconsin Triennial Engineering Exposition, University of Wisconsin, College of Engineering, Madison, Wis., Apr. 10-12.

National Association of Architectural Metal Manufacturers, Montelcone Hotel, New Orleans, La., Apr. 12-17.

New York's 29th Annual Safety Convention and Exposition, Hotel Statler, New York City, Apr. 13.

Automotive Engineers 10th Annual Earthmoving Industry Conference, Pere Marquette Hotel, Peoria, Ill., Apr. 14-15.

Annual General Meeting of Consulting Engineers Council, Biltmore Hotel, New York City, Apr. 28-May 3.

American Society of Mechanical Engineers Metals Engineering Conference, Hotel Sheraton-Ten Eyck, Albany, N. Y., Apr. 29-May 1.

American Society of Civil Engineers Summer Convention, Sheraton-Cleveland Hotel, Cleveland, Ohio, May 4-8.

Purdue Industrial Waste Conference, Purdue University, Lafayette, Ind., May 5-7.

International Commission on Irrigation and Drainage Technical Conference, Reno, Nev., May 11-12.

Jet Airport Conference of ASCE Air Transport Division, Shamrock-Hilton Hotel, Houston, Tex., May 20-22.

It's salt spreading time on the Calumet Skyway— this pipe bears the brunt of the drainage

4-D Wrought Iron Pipe—nearly 400 tons of it—drain the structures of the 7½ mile elevated toll bridge

Winter forecasts heavy salting on the new Calumet Skyway in Chicago.

Salting eliminates icy highway hazards for hurrying motorists. But salt-laden slush and run-off water in highway drainage systems can be extremely corrosive. So the choice here, according to consulting engineers on the job, was 4-D Wrought Iron Pipe. Reason why: the unique ability of 4-D to produce a corrosion-blocking oxide coating which actually protects the pipe against corrosive penetration.

In addition to corrosive run-off water on the *inside* of the pipe, 4-D Wrought Iron also has to withstand the salt spray kicked up and eddied about on the *outside* by whizzing cars, trucks and buses.

4-D Wrought Iron plate was fabricated into 14", 16" and 18" O.D. pipe for this all-weather installation. Consider the possibilities of 4-D Wrought Iron whenever the plans call for uninterrupted service. A. M. Myers Company, Clark Building, Pittsburgh 22, Pennsylvania.

BYERS 4-D WROUGHT IRON

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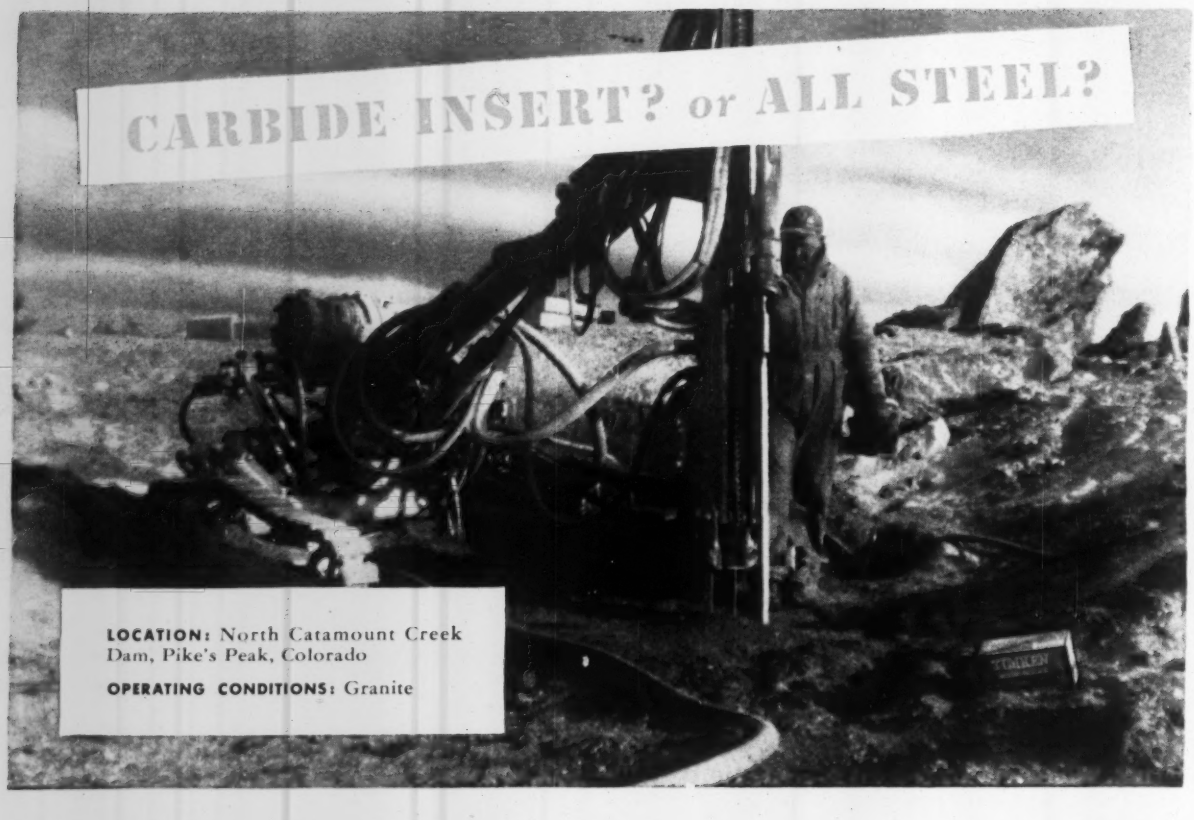

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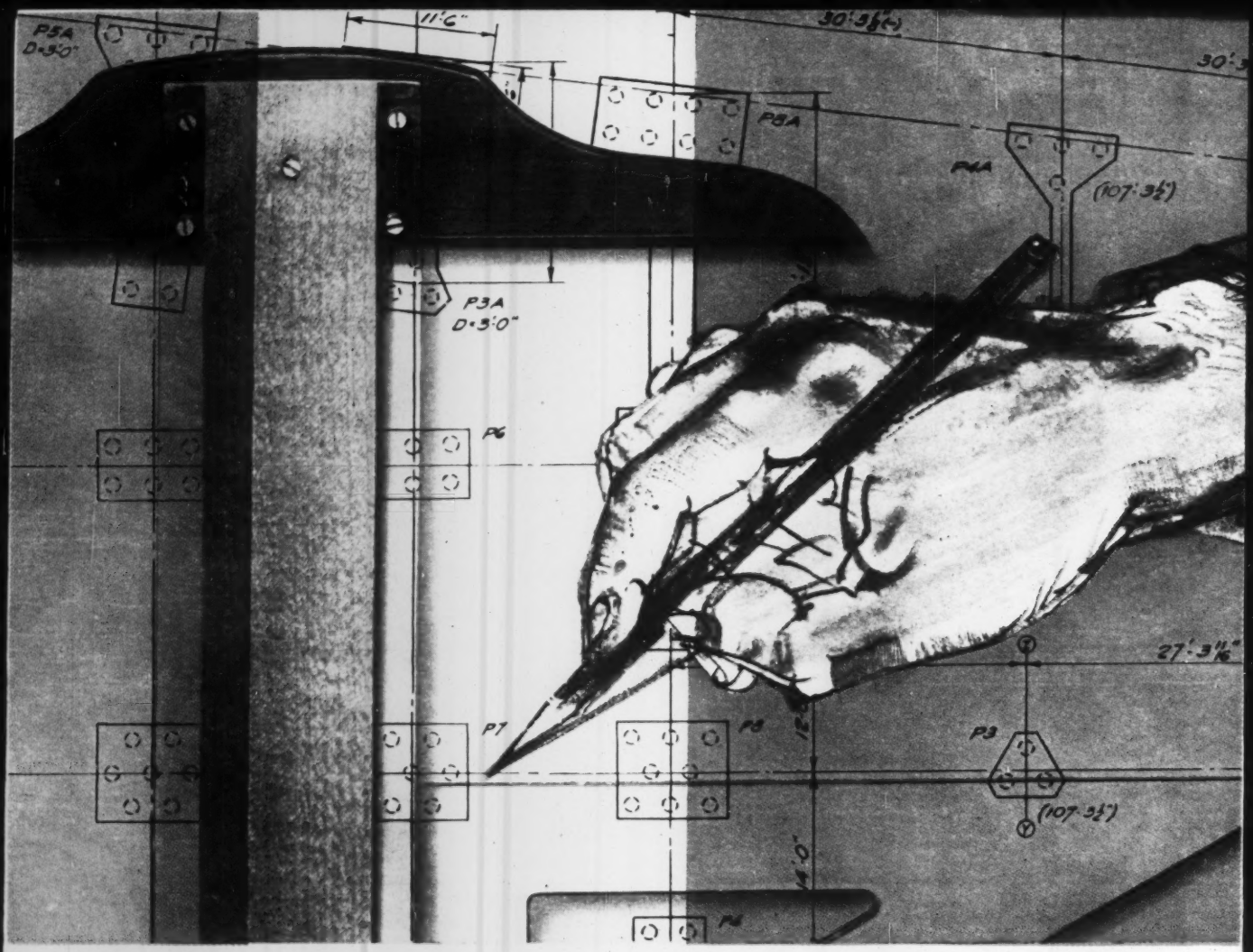

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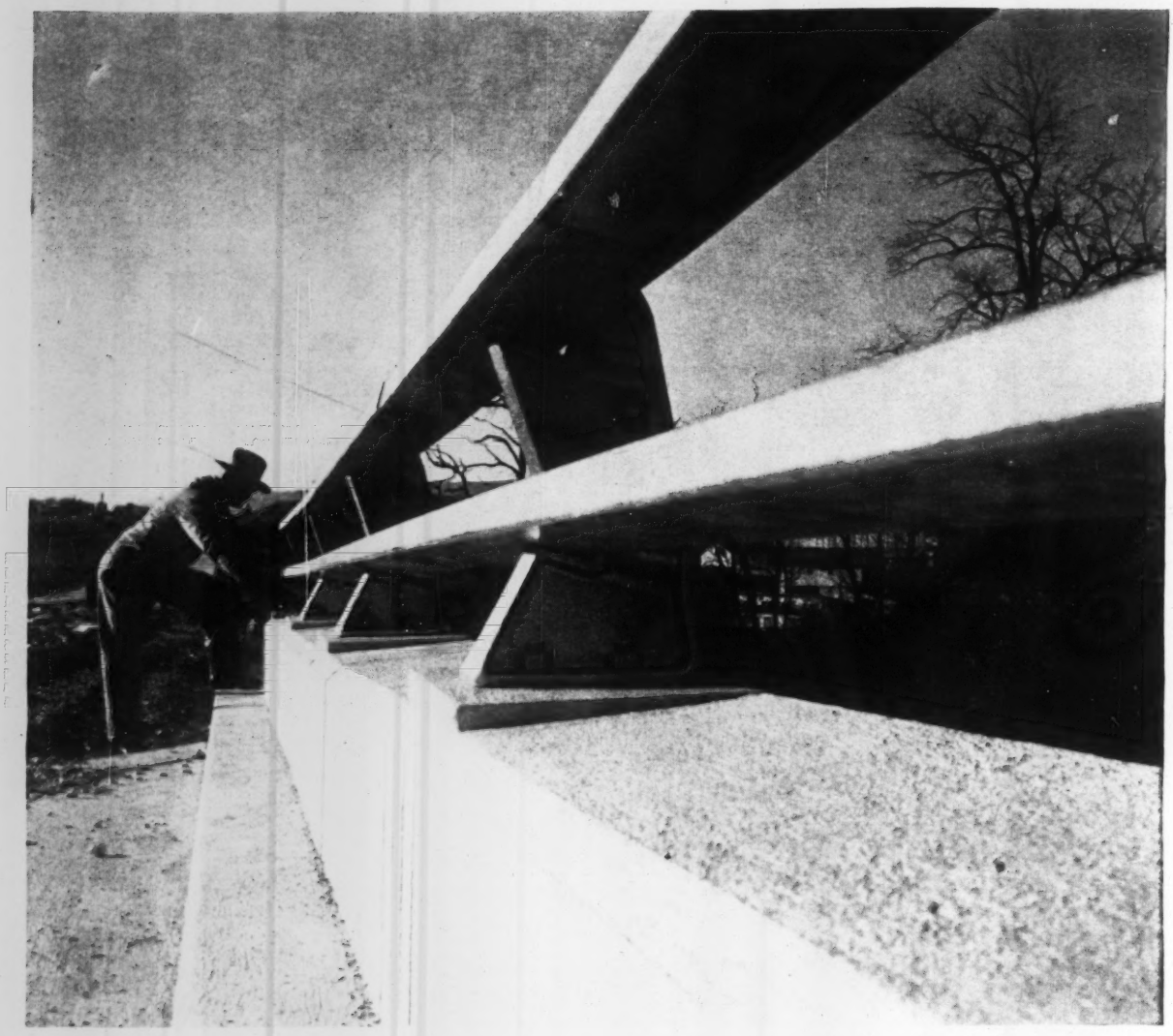

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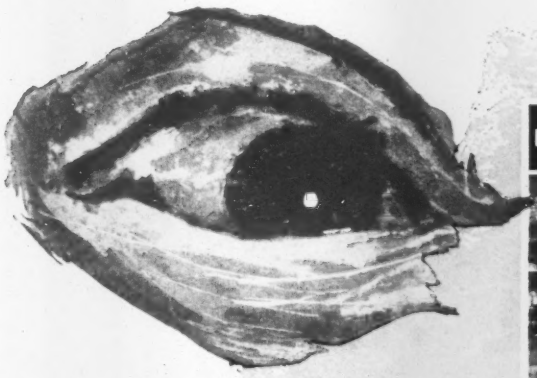

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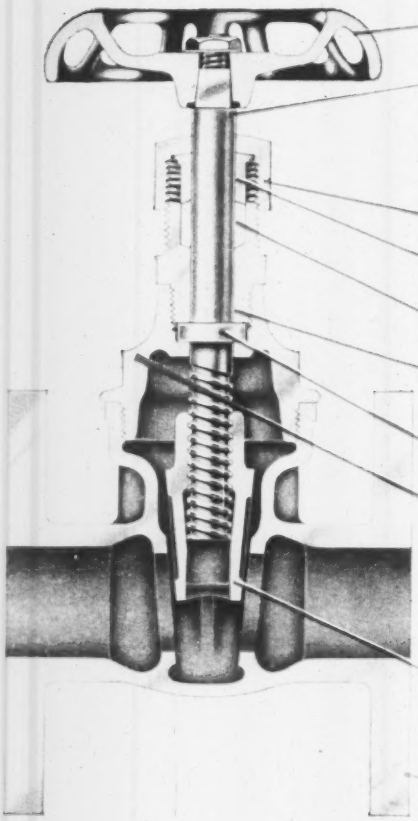

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PACKING BOX NIPPLE assumes thrust when closing valve. It is extra heavy, with hex flats larger than diameter of bonnet face to prevent leakage.

SPINDLE COLLAR, integral with spindle, is large and wide to resist thrust and shearing strains.

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SOLID WEDGE is tapered equally on both faces. Lugs on sides of wedge engage guide ribs in body to reduce drag and minimize chatter.

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ENGINEERING NEWS-RECORD

Vol. 162, No. 13 April 2, 1959

Number of copies printed this issue 84,249

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THE CONSTRUCTION WEEK

BIG FIRST QUARTER—Contract awards of $4.6 billion in the first quarter topped 1958's first quarter by 20%. Private work was 30% ahead at $1.67 billion. Pacesetters were industrial building, up 32%, and housing, up 42%. Housing doesn't look quite so good in the second quarter. Public work was up 12% to $2.3 billion. Federal contracts led the way with a 54% jump; state and local work rose only 1%.

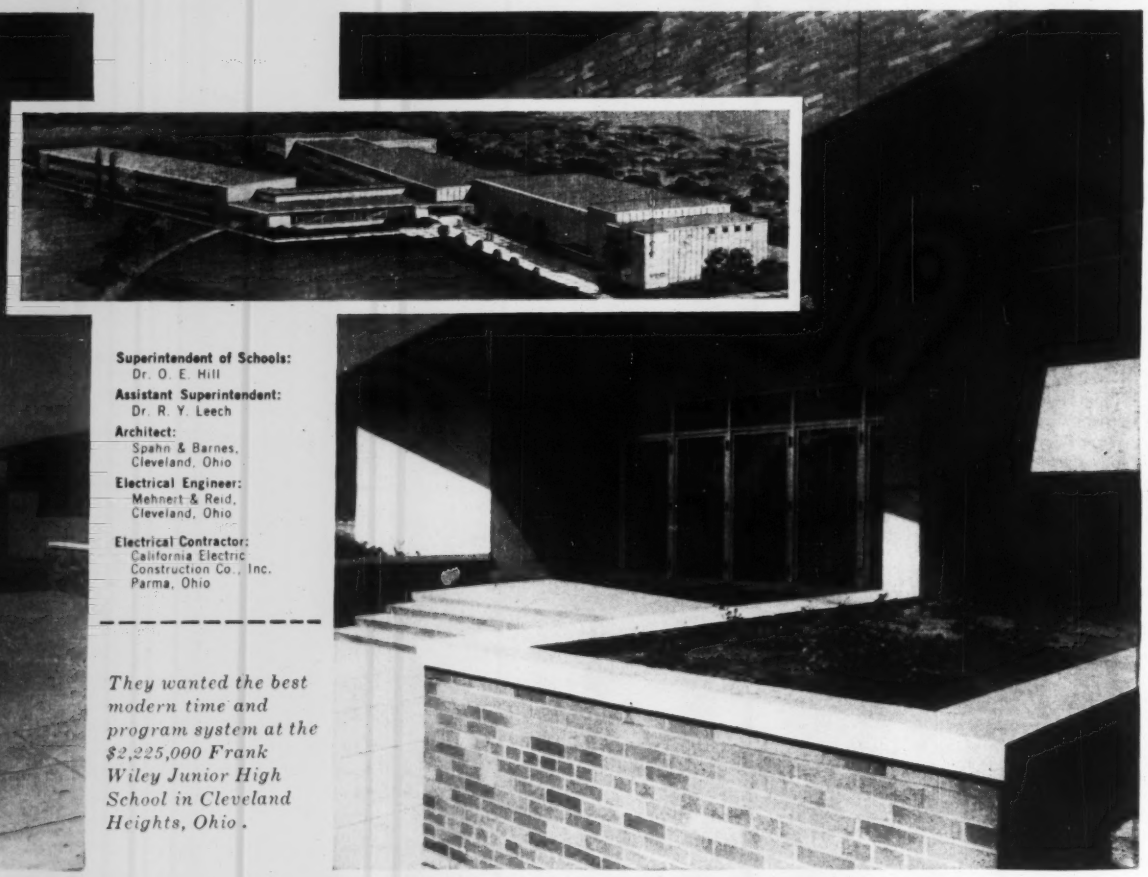
PAY OFF OR PAY INTEREST—Nebraska may have to pay 5% interest to contractors on final payments withheld on road contracts. Interest would start 90 days after completion of the contract, under a bill passed by the legislature. It would accrue on the 3% the state withholds until the job is completed and accepted. Contractors say it takes anywhere from 26 to 130 weeks to get final payments in Nebraska; 43 weeks is normal (ENR Oct. 17, 1957, p. 293). State officials concede a five to nine-month lag.

HIGHWAY RECORD TAKING SHAPE—Highway and bridge contracts this year could top $5 billion for another new record. The outlook is based on preliminary results of an ENR survey of state highway department plans. With only 34 states and the District of Columbia reporting, $3.6 billion worth of work is budgeted for 1959 lettings. So far, only seven states plan cutbacks in over all highway awards. They are Colorado, Maine, Missouri, Ohio, Oregon, Rhode Island and South Carolina.

VIRGINIA SAYS "PASS"—Virginia won't try to match its 1960 allocation of federal funds for Interstate roads. It will put what money it can into building other roads in the state's 48,000-mile system. Virginia would have to get up $2.6 million to match the federal allocation of $18 million. Virginia is the first state to announce a slowdown. However, the fiscal 1960 allocation will remain available until 1964.

BIDS ASKED ON HIGHWAY ROCKFILL—The Corps of Engineers' Portland District will open bids on Cougar Dam June 2. To build the 445-ft high structure, tops among rockfill dams, will require about 2.2 million cu yd of common excavation, 19,000 cu yd of tunnel excavation, 10.7 million cu yd of rockfill dam, 60,000 cu yd of concrete and 5 million lb of steel. Estimated cost: $42.9 million. It will be on the South Fork McKenzie River near Eugene, Wash.

FIRST EVE, NOW ADAM—For four years home builders listened to what women had to say about housing at an annual Women's Housing Conference. This year men will also have their say. The National Association of Home Builders will sponsor a Family Conference on Housing in Washington composed of husband and wife teams from all parts of the nation.



Superintendent of Schools:
Dr. O. E. Hill
Assistant Superintendent:
Dr. R. Y. Leech
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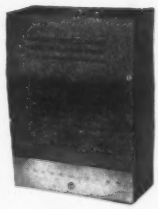

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WASHINGTON OBSERVER

- **Outlook for construction bills:**
  - **Housing will test the President**
  - **Veto is likely on airports**
  - **Highway bill heads for impasse**

● **Take a look at how construction is faring** in Congress at the traditional half-way mark—the 10-day Easter recess. Political realities have made their mark on the program President Eisenhower submitted to Congress in January—and on the plans of the Democrats to go their own way after their sweep of last fall's elections.

Spending is still the big issue—and construction is directly involved. It's still not settled whether the President will hold the line. The Democrats have whittled down their spending figures, but the measures they send to the White House will force President Eisenhower to fish or cut bait.

Here's a check list on specific proposals:

The omnibus housing bill, that the President will get by mid-April, will be his first big test. It is several billions bigger than he wants. He could veto, and ask Congress to pass more mortgage insurance authority for FHA —the only must part of the package.

The airport construction program will be around $330 million when it goes to the White House, compared to the Administration's $200-million request. A veto seems absolutely certain.

TVA will get authority to finance $750 million worth of new plants by issuing its own revenue bonds. Construction would be spread over five years or so.

More ICBM bases and more of the costly underground bases will be voted by Congress. President Eisenhower won't veto, even though it would boost the estimated $720 million he scheduled for all missile base construction for the year beginning July 1.

The rate of highway construction is still in doubt as Congress and the President head for an impasse. Congress won't increase the gasoline tax to the trust fund; President Eisenhower so far hasn't weakened on paying for the highways out of general Treasury revenues.

Federal money for school construction is extremely doubtful; the segregation issue still controls this.

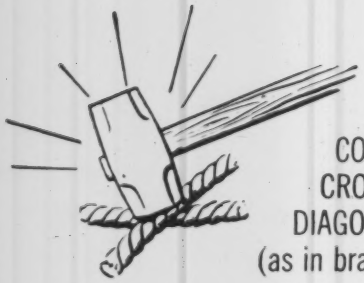
The public works package—rivers and harbors, flood control and the like—will be bigger than the President's request. There will be money for new starts. But President Eisenhower hasn't vetoed such spending increases under almost identical circumstances in the past, and he isn't expected to veto the increases this year.

Aid to economically depressed areas just squeaked through the Senate. Anything larger than the requested $53-million program will run into a veto that isn't likely to be overridden.

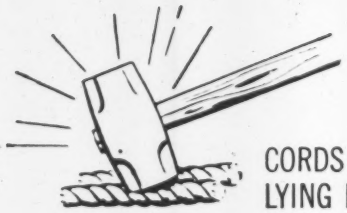
A new atomic power plant program will be authorized calling for perhaps six or seven prototype reactors that would take about $200 million or more to complete.

ROYAL CORD AIR HOSE

WHICH HOSE CONSTRUCTION CAN TAKE THE BEATING?



CORDS CROSSED DIAGONALLY? (as in braided hose)



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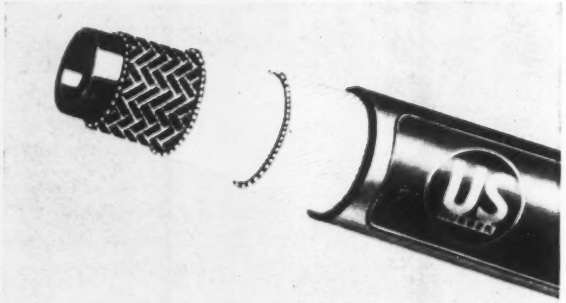
The exclusive and outstanding features you get in U. S. Royal Cord Air Hose constitute one of the main reasons why



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Can Wages Be Tied to Productivity?

President Eisenhower Says . . .

". . . If we are going to remain a country without artificial control . . . then labor and business must be very, very careful about . . . pushing wages each year above . . . increases in productivity . . ."

But Construction Men Say . . .

"Productivity is a word without much meaning. It can't be measured."

"Productivity will be a bargaining factor only in the sense of trying to get a full day's work."

The construction industry is once again rejecting President Eisenhower's plea that wage increases be limited to increases in productivity.

Most contractors and construction workers feel the President's wage formula does not fit construction industry operations. They say productivity cannot be measured. They have not used it as a factor in collective bargaining before and do not intend to do so now.

An ENR survey shows many contractors have given no thought to the productivity issue because, they say, it has never become a problem. Some profess to use it as a bargaining point—but they usually mean efficiency, not productivity. And efficiency breaks down into such issues as sloppy work, wasted time, restrictive work practices and featherbedding.

It is this type of hard, cold, tangible cost problem that steals the industry's attention away from the broader problems of inflation. And solutions to this kind of problem do not call for the mathematical precision the President's formula would require. The President treats productivity increases as the joint contribution of labor and management.

• **What they say**—"Productivity is always talked about a good bit," says one contractor, "but it never becomes an issue at the bargaining table. It's hard to measure because every construction job is different. I would place worker productivity way down at the bottom of our list of labor problems."

"All we are interested in is a good day's work for the pay," another contractor observes. "I'm personally very happy to see construction workers get a raise, but I want to be sure first that I get more work in return for it."

"Productivity is not a bargaining issue," adds another contractor. "It is impossible to measure for purposes of setting wage scales. After all, there's a limit to the amount of machinery that can be introduced into the building industry and a limit to how much a man can do every day. How can you measure what he does and what the machine does?"

Another contractor takes this tack: "Our use of productivity is actually a negative thing. We can look at an area where productivity is poor. We can't measure it as you can on an assembly line. But we can measure the inches of weld a man does, the number of boilerplates put on, or the square feet of formwork or brickwork completed. We know how many man-hours are required for particular jobs. When they go up, despite improved methods, something's wrong. That's where wasteful work practices come in. The problem is divorced from wage increases, and it should be."

• **What is productivity?**—The views expressed above are a far cry from the productivity talk in Administration and AFL-CIO circles.

President Eisenhower has consistently taken the position that wage increases should be limited to those "justified by increased productivity." Increases that go beyond this are "inevitably inflationary," he says.

What he is saying is this: When we destroy the value of the dollar, through higher prices and higher living costs, we have inflation. We can avoid this by keeping consumer prices reasonably stable. As management and labor become more efficient, they produce more with the same amount of labor and each completed item costs management less. This reduction is a saving—a productivity increase—that can be used for wage increases without raising prices.

The idea is not new. It has been kicked around for years and is accepted in principle by most economists.

But even among economists there is wide disagreement over what "productivity" is and how it can be measured, if at all.

The trouble comes in trying to apply it, either to the economy as a whole or to a specific industry or craft, and in how to equate the interests of those affected by use of the productivity theory.

The U. S. Labor Department defines it as "the amount of goods and services produced in an hour of work." This depends in part on a number of things: the nature and extent of capital investments, such as machinery and research and development, and on managerial ability, including supervision, as well as the skill, efficiency and availability of labor and materials.

Taking the nation's output of goods and services and comparing it with the total number of man-hours required to produce them, the Labor Department says productivity for the economy gen

"Productivity is hard to measure . . . every job is different."

cally increased at the rate of 2½% a year between 1910 and 1953.

The President, who admits measurement difficulties, says that the average annual increase since World War II has been 3.4%.

The AFL-CIO, which has no quarrel with the Labor Department definition, contends that the increase grows bigger every year and jumped some 7% in factory work last year. It expects this "extraordinary rise in productivity" to continue as business moves out of the recession without a corresponding drop in unemployment.

As a result, the AFL-CIO is now using the President's theory to its own advantage. It says this increase in productivity should be shared with workers and consumers as well as business, and justifies substantial wage increases without price increases.

The President agrees—in a limited sense. He says a wage increase "justified by increased productivity by any reasonable standard" should be approved and "we ought to make certain that it takes place."

But labor, of course, has never regarded productivity increases as a ceiling on wage increases.

One of the best illustrations of this is the 2½% annual improvement factor negotiated with General Motors by the United Auto Workers 10 years ago. This annual wage hike represents a distribution of some of the productivity increase, but it's only one of several wage increases the union members will get.

Use of a productivity formula would slow down if not arrest labor's push for a steady advance in workers' real and comparative income.

If used on an industry basis, it would tend to work against employees in industries that are less susceptible to technological progress.

• **Not construction alone**—The construction industry does not stand alone in its disenchantment with the Eisenhower proposal.

A labor relations director in one of the nation's leading industrial firms has serious reservations.

"There is not at this time any formula that can accurately measure productivity," he says. "Probably there never will be. The output half of the ratio is impossible of close measurement because of the wide variances in the kinds and qualities of goods and services over any period of time. The input half of the ratio is impossible of close measurement because no one can assign to any one element in the complex an indisputable contribution in increased output."

• **Drawbacks in construction**—The ENR survey indicates that any attempted application of the President's theory in construction would face serious practical and psychological obstacles.

The practical obstacle is the difficulty of identifying or measuring productivity.

"Productivity is hard to measure because every job is different," an Atlanta contractor observes. "In the mason trades, for example, you're working with 40 different patterns of brick. The number and spacing of windows vary. And it makes a lot of difference whether the brick will be laid 10 stories up or on the ground."

A Miami unionist says: "You can't talk about productivity in the building business. Even on project houses, there are never two exactly alike."

"We don't think productivity can be measured in the construction industry," a Dallas contractor reports, "so we have never made a time study, or compared old processes with new processes, or set up productivity goals. Different soil conditions, different types of construction, new processes—all have varying effects on different jobs."

Even if productivity could be measured for construction industry purposes, there is no indication that the industry would follow the President's advice voluntarily.

The majority of contractor responses, for example, add up to something like this:

"We don't think about productivity the way the President does. The productivity argument is more for factory workers—people on an assembly line. Perhaps productivity can be measured by someone but we've never attempted it; all we have are our labor cost records for each job. Anyhow, we don't have much trouble with productivity. It's gone up. Apprenticeship programs are giving us better men instead of the bellhops we got during the war. And with jobs scarce now, the men we have are working harder."

A few contractors, however, disagree quite strongly with most of these views, although none of them suggests trying to put the Eisenhower proposal into action. Among their observations are these:

• Productivity in the construction industry is either decreasing or not increasing as fast as it should because labor is inefficient.

• It can be measured. For example, "You can measure the square feet a cement finisher can complete in a given number of hours and you can compare this with the output of a fellow worker doing the same job."

But most employers in this group slip into the area of worker efficiency when they discuss productivity. Or else they tend to confuse estimating labor costs for bidding purposes and productivity measurement. For example, one contractor says: "A contractor can measure productivity. In fact, he bids on it. But it is impossible to measure for the purpose of setting wage scales."

Labor doesn't come up with constructive suggestions on the productivity theory either. Labor people seem inclined to think defensively in terms of labor efficiency.

One local labor leader says it is a management problem—how a job is organized and supervised. Another reports: "We have given carte blanche to contractors to lay off workers who are not producing a reasonable volume." Another adds: "We have stretched our worker output to the limit. The only way productivity can be improved is for the contractors to work out better methods of handling materials."

Some construction men charge you can't talk to labor people about productivity "because they don't understand economics."

• **The prospects**—ENR's survey indicates there will be little if any talk about productivity at the bargaining tables in the days ahead.

What does occur will relate almost exclusively to only one element of productivity, namely labor efficiency. In this sense, the issue is reduced to a trading point and not to a wage increase formula.

Construction men who do consider productivity a bargaining factor will probably continue to think in the terms of a San Francisco contractor who says: "The only measurement I care about is that the men keep busy all day."

Artificial Ice Bridge Leaves Firm Up the Creek

An artificial ice bridge across Canada's Saskatchewan River proved to be a technical success, but a financial failure.

The 150-ft ice bridge was built by an Edmonton, Alberta, sand and gravel company as a shortcut (ENR Feb. 19, p. 27). The company expected to save $45,000 by routing its trucks over it. But an unseasonable warm spell dissolved the bridge before it could pay off.

Twin Bridges Sand & Gravel Ltd. estimated that 100,000 tons of gravel would have to be hauled over the bridge before savings would offset the $40,000 cost of the project. Only 30,000 tons were carried over before the early thaw broke up the bridge.

Boost for Asphalt

House report asks no limitation on bids for runways

Asphalt pavement for military airfields got sweeping Congressional backing last week.

In a strongly worded report, the powerful House Armed Services Committee called on the Air Force and the Navy to take bids on asphalt construction for all paving areas where well-designed flexible pavement will stand up under aircraft use.

The report swept aside all limitations on bidding competition between flexible and rigid pavement. The Air Force, in agreeing last December to accept asphalt construction for portions of heavy bomber runways, had told the committee that alternate designs would be put up for bids on any job where preliminary estimates of construction cost showed one type within 10% of the other. Otherwise, to save design expense, plans and specifications would be prepared only for the cheaper type, the Air Force spokesman said.

This proposal riled the committee. What the construction industry needs, said the committee in its report, "is not the prejudgment of a phantom government estimator but an honest deck, dealt above the table."

At its major recommendation, therefore, the committee directed that the Air Force and the Navy "specify as an alternate in all future bids not only portland cement but asphaltic concrete of the design and on the criteria of Dec. 2, 1958" (ENR Dec. 4, 1958, p. 28).

The armed services report also expressed grave concern at the Navy's "lack of coordination and collaboration with the Corps of Engineers, the Air Force and this subcommittee" on the testing and engineering studies which were going on with the "full knowledge of the Navy and at the very time" it embarked on a testing program of its own.

Failing to Say 'No' Costs Firm $55,000 Damages

A Toronto court has ordered an engineering and construction firm to pay the city of Brantford, Ontario, $55,000 in damages.

The firm, Wallace, Carruthers & Associates, Ltd., built a combined firehouse and police station for Brantford in 1953. Four months after completion, the main floor sank.

The firm was not guilty of any professional error, the court said, but it was negligent in leaving final choice of floor construction to the city. The building site had been a garbage dump.

Bombed-out high school in Clinton, Tenn., is being reconstructed as . . .

Builders 'Bomb' Rebuilding Costs

Pledges of labor and material are cutting reconstruction costs on Clinton, Tenn., High School. The integrated school was wrecked by three time bombs last October.

Anderson County School Board has let a $661,700 contract for rebuilding the school and adding a new classroom wing. The sum represents only part of the material and none of the labor. The AFL has pledged labor for the job, manufacturers are contributing material and equipment.

Architects for the original school, Barber & McMurray of Knoxville, are giving their services for the rebuilding. Their preliminary damage estimate was $250,000, but after debris was cleared, local contractors felt that no set figure could be given for the work. The general contract, with C. M. Kidd Construction Co., Clinton, is an "opened end" proposition.

So far, in addition to labor and services, manufacturers have pledged clocks, aluminum window frames and some plumbing equipment. The school board has also received a private collection of nearly $1,500 for text book replacements.

Senate Unit OKs Water Resources Study

A comprehensive study of the nation's power needs and facilities seems almost certain now.

The Senate Interior Committee last week recommended a $225,000 investigation of water resources and hydropower needs through 1980. The measure now goes to the full Senate for approval.

The study, sponsored by Sen. Mike Mansfield (D., Mont.), would probably take two years to complete.

The extent to which it goes into hydropower depends on how the committee treats a proposal by Sen. James E. Murray (D., Mont.) for an investigation of the country's power transmission lines. The two studies have different goals, but would touch on many of the same issues.

The Mansfield investigation calls for a special Senate water resources committee that would include a look at hydropower generation on the national scope.

The Murray transmission line study would include as a major objective a giant power grid, particularly in the western states. The study might lead to legislation to assure development and organization of bulk power supply.

Senator Murray's proposals have not been taken up yet by the Interior Committee. If the transmission line study is approved in committee and then passed by the Senate, most of the power issues of the Mansfield study would be transferred to Senator Murray's investigation.

Old Tank Collapses

Corroded supports buckled under a 45-year-old water tank in New York City last week as men worked to repair the weakened structure. The tank, with 3,000 gal of water, dropped 20 ft, punched through three floors, injured seven and sprayed bricks and water across the block.

New Tank Mushrooms Over Helsinki Suburb

It's a peaceful mushroom shape—this new water tower in the town of Lauttasaari, outside Helsinki, Finland. It's one of the biggest structures in the country—114 ft to the top of the tower and a diameter of 137 ft at the outside edge of the funnel.

Water Carries Box Culvert to Carry Water

Tugs push a 1,350-ton box culvert toward its resting place beneath Southern Pacific's fill across Great Salt Lake Utah. Its water-tight ends are installed so the unit can be pushed like a barge. They will be removed after the box has been filled with water and sunk into position. A concrete top will be placed later. The box is 135 ft long, 15 ft wide and 25 ft high.

In Washington . . .

Highway Bills Go Nowhere

Congress recessed for Easter without taking any significant action on legislation affecting highways. And that could well be the story at the end of the session as well.

The "hot" issue in highways this year is the Eisenhower Administration's proposal to increase the gasoline and diesel fuel tax by 1.5 cents per gallon to bail out the Interstate Highway Trust Fund. The Administration's bill has not yet been introduced. And the Democratic leadership in Congress is on record against the increases.

What means will develop to save the building program from bogging down remains to be seen.

As far as construction is concerned, highway interests feel there is little chance for action of any kind. Several bills are in the hopper in both houses to include specific highways on the Interstate System. But these bills will probably never get a hearing. The same goes for such individual construction proposals as Sen. Richard L. Neuberger's bill to improve the Alaskan highway.

On committee calendars are some dozen bills that would increase the mileage on the Interstate System above the present 41,000-mile figure and a number to reimburse states for free or toll roads that were incorporated, ready-made, into the Interstate System. Both these proposals got short shrift last year.

The reimbursement bills may get hearings this year because of the number of Congressmen who have attached their names to them. But a Congress trying to economize is unlikely to take them very seriously.

The Senate Public Works Committee has held no hearings on highway proposals and has none scheduled. The House Public Works Committee has none scheduled and has reported only one bill—to extend from five to seven years the period in which construction must start after right-of-way is acquired.

In Mississippi Valley . . .

Funds Search Casts a Shadow

"Despite irrefutable increases in labor and material," highway construction prices are holding the line in the Mississippi Valley. The reasons:

- Clear, complete and concise highway bridge plans prepared by the state highway departments.
- Ingenuity of contractors and equipment manufacturers.
- Mutual respect, cooperation and teamwork of the highway departments and the construction industry.

These were the views of M. Clare Miller, president of San-Ore Construction Co. of McPherson, Kan., presented at the recent 50th annual meeting of the Mississippi Valley Conference of State Highway Departments held in Chicago.

But this bright spot of news was heavily shaded by concern for adequate funds to keep the highway programs of the 13 Mississippi Valley states rolling.

In some cases, notably Ohio, the big shadow is fear of no federal apportionment of Interstate System funds for fiscal 1961. Ohio has already obligated almost all of its fiscal 1960 share.

Other states, such as Missouri and North Dakota, are hard pressed for funds to match federal aid. Gas tax increases and reaching into other money pots are two answers a number of states are contemplating.

Several of the mid-America states plan to put much more construction under contract this year than in 1958.

But this hinges on the availability of sufficient federal and state funds. And "unless major legislative changes are made at this session of Congress, there will be no Interstate apportionments at all for 1961 and only $500 million for 1962," Gen. Louis W. Prentiss (Ret.), executive vice president, American Road Builders Association, pointed out.

His warnings were reinforced by Bertram D. Tallamy, Federal Highway Administrator, and A. E. Johnson, executive secretary, American Association of State Highway Officials.

Oklahoma Highway Agency Cuts Staff to Pay Bills

Oklahoma's newly appointed State Highway Commission has voted to drop 156 employees from the Highway Department payroll in a move to alleviate a financial pinch.

Since January the department has been paying its bills on a day to day basis and hoping for bad weather to slow up projects.

The commission claims the shortage was created by an overextension of funds through an overabundance of contracts (ENR Dec. 18, 1958, p. 26).

In North Atlantic States: Good Highway Progress

The eleven North Atlantic states have more traffic than any other region in the country. They also face the toughest job of building through many highly urbanized areas.

Despite the problems of route location and design, these states are making good progress, as a group, on their Interstate System.

The group has 42.1% of its Interstate mileage completed or under construction. This compares with a national average of 28%.

Right-of-way and other preliminary work comprise 42.3%, compared to 41.4% nationally.

No work has been started on 16.6%, compared to a nation-wide 30.4%.

However, the good news is tempered be deducting completed toll and free roads that had been incorporated into the Interstate System. Completed-or-under-construction mileage then stands at 14% for the North Atlantic states, 20.3% for the nation.

Still, the region's no-work-started percentage is only half that of the national average.

This picture was reported by Richard A. Haber, chief engineer, Delaware State Highway Department, to the Association of Highway Officials of the North Atlantic States (ENR Mar. 26, p. 26).

In New York: Old RR Bed Will Become Highway Bed

The roadbed, rock ballast and bridges of a defunct railway will be turned into a limited-access highway in Westchester County, N. Y.

The county will use 1.2 miles of the right-of-way of the old New York, Westchester & Boston Railway between White Plains and Scarsdale to build a 24-ft-wide highway.

The railway route will need only a cleaning treatment where silt has penetrated the gravel, and a 6-to-9-in. granular topping before it is paved, according to King & Gavaris, New York City consultants for the project.

The proposed highway will be a relocation of a route that now passes through a congested traffic area. Interchanges on grade will be built at each end of the new highway.

The Village of Scarsdale acquired the right-of-way 20 years ago when the railway went into bankruptcy. If purchased now, the same property would cost about $1 million.

The New York State legislature passed a law empowering Westchester County to prevent driveways and other accessways from opening onto the new highway. The bill awaits the governor's approval.

Tuscaroras Lift Paleface Scalp?

The Tuscarora Indians have apparently flung a final, lethal tomahawk into the New York State Power Authority's chances of building the Niagara Power Project according to the original Federal Power Commission license.

But the possibility that Tuscarora land might yet figure in the job still lingers.

The U. S. Circuit Court of Appeals for the District of Columbia ruled it would uphold FPC's decision in denying access to Tuscarora lands for the Niagara pumped-storage reservoir. But Robert Moses, volatile chairman of the Power Authority, told the Buffalo Chamber of Commerce that FPC was keeping open the question of Indian land.

According to Mr. Moses: "The Federal Power Commission has announced that it will hold hearings on our application for an amended license to construct a smaller reservoir without use of Indian lands. The commission has stated, however, that it will not limit the hearing to the specific request made in our application, but will consider a larger reservoir using some Tuscarora land but less than we originally asked."

Mr. Moses indicated, however, the Power Authority is not in favor of making another try for Indian land because of the prospective delays in getting a decision.

The Court of Appeals ruling last week had two effects:

- It upheld the commission's 3-2 decision that, under Section 4 (3) of the Federal Power Act, no project could be licensed which would flood out Indian lands—violating the original purpose for which the lands had been established.
- It also overruled both Mr. Moses and the Federal Power Commission. Both argued that the FPC did not have legal authority to rule on the Indian issue in the first place. (The court told FPC to rule on the Indian complaint.) Both Mr. Moses and the FPC had asked the court to reverse itself on the requirement that the Tuscarora complaint be considered as part of the license proceedings.

Therefore, the court has upheld all of the Niagara license except the part relating to a reservoir, and that portion was remanded to the commission for further action.

Mr. Moses' amendment to his application calls for a 45,000-acre-ft reservoir off Indian lands. It will be considered at a new FPC hearing and "disposed of as promptly as possible," the commission says.

However, the FPC has served notice that it does not intend to consider only the feasibility of the reservoir; it will consider the new, smaller reservoir as the keystone to the entire project.

The commission noted that the new reservoir would have 15,000 acre feet less storage than the original one, on which the license had been based. And it added, "The proposed amendment raises questions as to whether any modification of the project may be lawfully authorized under the provisions of the Federal Power Act and pursuant to the provisions of Public Law 85-159, 85th Congress, approved August 21, 1957, without the use of Indian (Tuscarora) lands."

Both the Congress and the Federal Power Act call for maximum development of river basins in general and the Niagara River in particular.

Wanapum May Stir Import Fight

The "Buy-American" issue reared its head again with the announcement of bid openings on May 8 for the $150-million Wanapum Dam on the Columbia River in Washington State.

The Public Utilities District of Grant County will allow bidders to submit bids on either foreign or domestic turbines and generators.

However, any bidder who proposes supplying foreign-made equipment must submit an alternate bid for equipment made in North America. Plans call for 10 generators with a total installed capacity of 832,000 kw.

The specifications say alternate bids are necessary because of "unsettled world conditions . . . with attendant possibility of hostilities which might give rise to difficulties in delivery of equipment."

Commissioner Paul Neihart says the PUD called for alternate bids because of the threat of legal action if the specifications excluded competitive foreign equipment.

The concrete and earthfill Wanapum Dam, including all equipment, will be constructed under a single contract. It may amount to $150 million, expected to be the largest single construction contract ever awarded in the Pacific Northwest. Work is expected to begin September 1 and be completed in the fall of 1964.

Haza Engineering Co. of Chicago planned the modified "Z-shaped" structure. Dillon, Reed & Co. and Kuhn Loeb & Co., New York City, are principal bankers handling the sale of $200 million in 50-year revenue bonds to finance the plan.

Canadian Power Plans Hit By Dominion River Ruling

Canada appears to have squashed two ambitious plans for privately financed hydro power developments in British Columbia. The Dominion government has established that its rights take precedence over provincial rights on rivers flowing into the U. S.

B. C. has returned a $2.5-million deposit made by Frobisher-Ventures covering its $700-million plan for a power and metallurgical development along the Yukon and Taku rivers (ENR May 31, 1956, p. 82).

A deposit made by Kaiser Aluminum and Chemical Co. in 1954 is still held by the provincial government but will be returned. Kaiser planned to build a low-head dam at Castlegar on the Columbia River. It would smooth out flows downstream in the U. S. for power generation by the Bonneville Power Authority (ENR May 27, 1954, p. 53).

$10.9 Million Is Low Bid For Floating Bridge Job

Low bid of $10,969,596 for the buoyant section of a second floating bridge across Lake Washington was submitted by Guy F. Atkinson Co. of San Francisco last week.

Contract award is expected after the necessary revenue bonds are sold to finance the bridge. The Washington State Toll Bridge Authority is the builder.

The contract calls for casting 31 pontoons, each 60 ft wide, 360 ft long and 14 ft 9 in. deep.

The new bridge will be east of Seattle and 3.1 miles north of an existing floating bridge. The floating section will be 7,519 ft long. Two steel spans and fixed approach spans bring total length of the crossing to 9,374 ft (ENR Feb. 19, p. 30).

Willem Rudolfs Is Dead; Was Engineer, Teacher

Willem Rudolfs, former head of water and sewage research of the New Jersey State Agricultural Experiment Station at Rutgers University, has died in his native Holland at the age of 73.

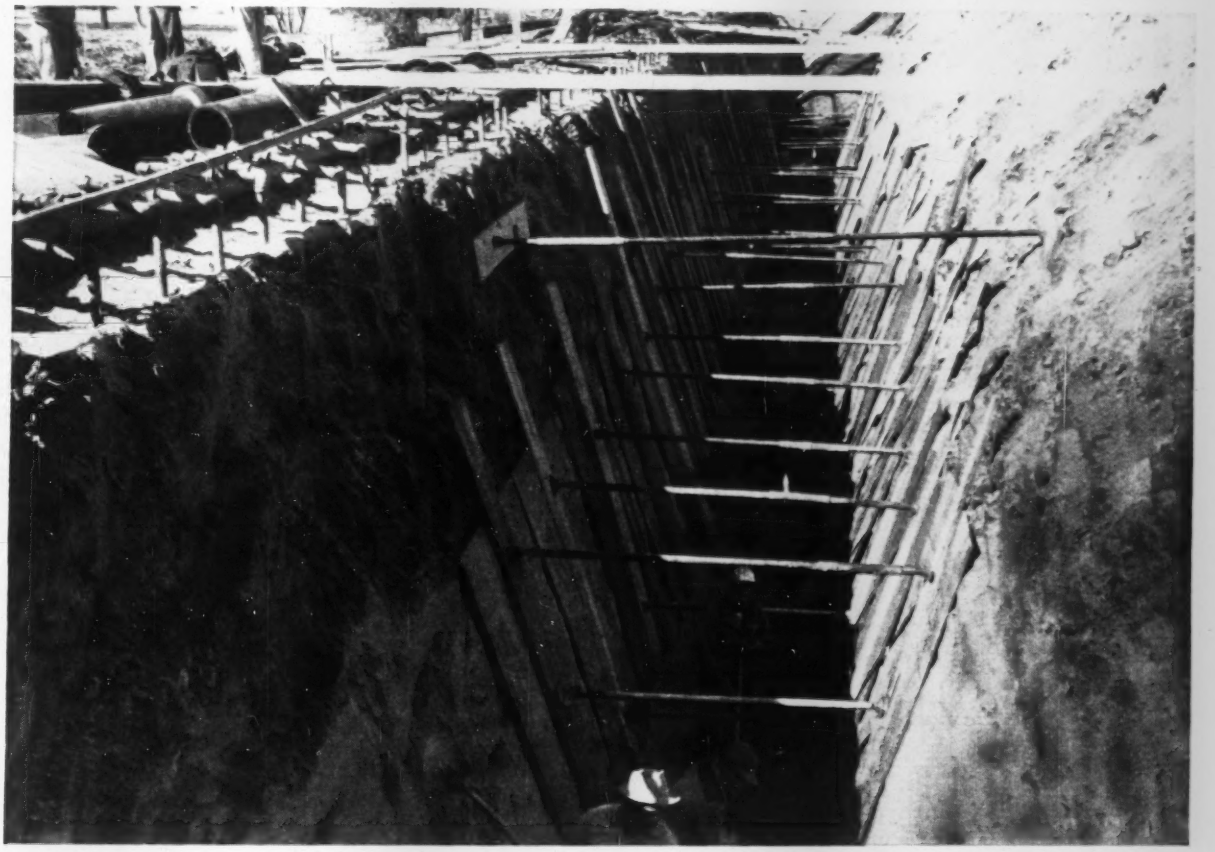
Long-time ENR readers may remember that in the late 1930s he conducted a monthly column in ENR called, "Current Notes on Sewage Disposal."

Professor Rudolfs got part of his education in the Netherlands and France. He went to Rutgers in 1919 as a research fellow. Two years later he won his PhD as a biochemist in entomology—first in this country. That same year he took over the research post and held it until he retired and returned to Europe in 1953.

HOW TO HANDLE WET JOBS

#45 of a series

Project: Sanitary Sewers, El Paso, Texas
Contractor: T. N. O'Kelley, Utility Contractors, El Paso, Texas
Owners & Engineers: Public Service Board, El Paso, Texas



Wellpoints on 1 side perform unusual feat in coarse sand . . .

Dry 18-ft Deep Trench at 3,700-ft Elevation

At the reduced atmospheric pressure of 2/3-mile above sea level, any pump works at a handicap. To compound this problem, the contractor desired to install his wellpoint system (Griffin system) at ground level. Previous wellpoint practice in the area was to place the system on a berm nearer subgrade because of pump lift limitations.

• **Question:** in coarse water-bearing sand near the Rio Grande River, with discharge lines as long as 700 ft at times, could the necessary 18 ft lift be attained by a wellpoint system installed on only one side?

• **Based on previous** local experience it did not seem feasible, but events proved otherwise. Dry conditions were successfully maintained from the start, enabling T. N. O'Kelley to beat his 100-day time limit by 40 days.

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Around the World . . .

• **Rockets for tunneling**—The USSR claims to have developed a rocket-type tunneling system. The rocket is fitted with spray nozzles at the working end to allow passage of liquid fuel and compressed air. Ignited, the flame is said to burn through any type of ground formation. The rocket may ultimately be developed to permit cable or pipe laying without trenching, the reports say.

• **Patent medicine**—The Atomic Energy Commission is releasing 102 patents owned by the government. The patents cover a variety of atomic-power and construction applications. AEC will grant nonexclusive, royalty-free licenses on them.

• **Steel buying spurts**—Structural steel fabricators' new business zoomed to nearly 300 million tons in February. That's a 59% jump over a year ago. The January-February total is 52% above the first two months of last year. Probable reason: Large orders for bridge construction and an upturn in industrial building. But last year's slump in bookings is reflected in the January-February shipments—down 27% from '58.

• **350-mile pipeline**—Plans for a $50-million natural gas pipeline from Portland, Tenn., to the Chicago area have been announced by Tennessee Gas Transmission Corp. The 350-mile-long pipeline will be 30 in. in diameter.

• **Replacement value**—It's estimated that it would take $270 million to replace Delaware's highway system. The state has 4,128 miles of highways.

• **Highway bridges**—Wisconsin road-building plans for 1959 include 220 bridges. The Milwaukee Expressway is expected to add another 40.

• **Russians coming?**—Six Soviet experts on soils and foundations may come to the U.S. in June to attend a seminar—probably at Princeton. The invitation extended by the Highway Research Board and the American Society of Professional Engineers hinges on whether Russia will invite a similar group of U.S. experts to its country in August.

• **"Rumbler stops"**—A strip of rough pavement placed about 300 ft in advance of stop signs on a Maryland highway has lowered the accident rate at the intersections. Alerted by the rough pavement, 60% more drivers are heeding stop signs, Maryland officials say.

• **Bridge enlargement**—Work has begun on the $7.8-million Fort Lee, N. J., approaches to the forthcoming second deck of the George Washington Bridge across the Hudson River. George M. Brewster & Sons, Inc., Bogota, N. J., will build two three-lane tunnels under the existing roadway by the cut-and-cover method.

• **Another dam bridge**—The Tennessee Valley Authority has announced the design features of a $2.8-million bridge to be built over the Fort Loudoun Dam, near Lenoir City, Tenn. Its over-all length will be 2,312 ft and it will be 55 ft above the dam. The Bureau of Public Roads will pay slightly more than half the cost of the bridge and Tennessee will pay the rest. Design and construction will be by TVA.

• **Ohio River locks**—A $25-million contract for construction of locks on the Ohio River at New Richmond, Ohio, has been awarded to S. J. Groves & Sons Co., Minneapolis, Minn. Both locks will be 150 ft wide but one will be 1,200 ft long and the other 600 ft.

Bids Called for Biggest Prestressing Job

Bids for the most extensive prestressed concrete paving work in the U. S. have been called for LeMoore Naval Air Station, near Fresno, Calif.

The prestressed pavement includes three major segments: a 769x1,012-ft airplane parking apron, a 735x400-ft maintenance apron and a 522x75-ft taxiway. Primary advantage will be slabs with no joints.

The pavement will be 6 in. thick as opposed to 12 in. for a conventional slab. It will be post-tensioned in two directions. Design aims for a minimum residual stress before wheel loading of 150 psi in each direction.

Bids were called by the 12th Naval District Public Works Office. They will be opened April 22. The job is pegged at over $1 million. It's not known if the job will be cheaper than conventional construction.

Irrigation Projects

Senate committee votes $½ billion for two jobs

The Senate Interior Committee last week voted to authorize two quarter-billion-dollar irrigation projects—San Luis unit of the Central Valley project in California, and the Navajo and San Juan-Chama units of the Colorado River storage project.

Easy approval of both bills is expected when they reach the Senate floor after the Easter recess. Similar bills in the House are moving more slowly. The House Interior Subcommittee on Irrigation and Reclamation has held hearings on the San Luis project but has scheduled none on Navajo and San Juan-Chama.

The Senate committee authorized a $290,430,000 construction project for San Luis, including a dam and reservoir, a forebay and afterbay, the San Luis and Pleasant Valley canals, pumping plants, distribution systems, drains, channels, levee and flood works. San Luis is intended to provide irrigation for 500,000 acres of California land.

The committee authorized $221 million for construction of the Navajo and San Juan-Chama projects. Navajo would include a main gravity canal, tunnels, syphons, pumps, power plants, laterals, drains and distribution systems. San Juan-Chama would include regulating and storage reservoirs, and collection, diversion and conveyance systems. Navajo would irrigate 110,630 acres of New Mexico land; San Juan-Chama would irrigate an initial area of 39,300 acres in Colorado and New Mexico.

Contract Awarded for Minuteman Test Base

A contract for construction of two underground rocket-launching tubes and support facilities at Edwards Air Force Base, Calif., was awarded to Macco Corp., Paramount, Calif., and H. C. Smith Construction Co. and Kemper Construction Co. of Los Angeles.

The three companies made a joint bid of $670,695. Government estimate for the project was $724,981.

The underground launching installation will be used in the development of the Minuteman intercontinental ballistic missile.

The Minuteman is scheduled to be operational by 1963. It will be our first solid-fuel ICBM. The 60-ft rocket will be fired from a bombproof underground silo. The use of solid fuel will make the Minuteman easier and cheaper to fuel up, handle and launch than the liquid-fuel Atlas and Titan.

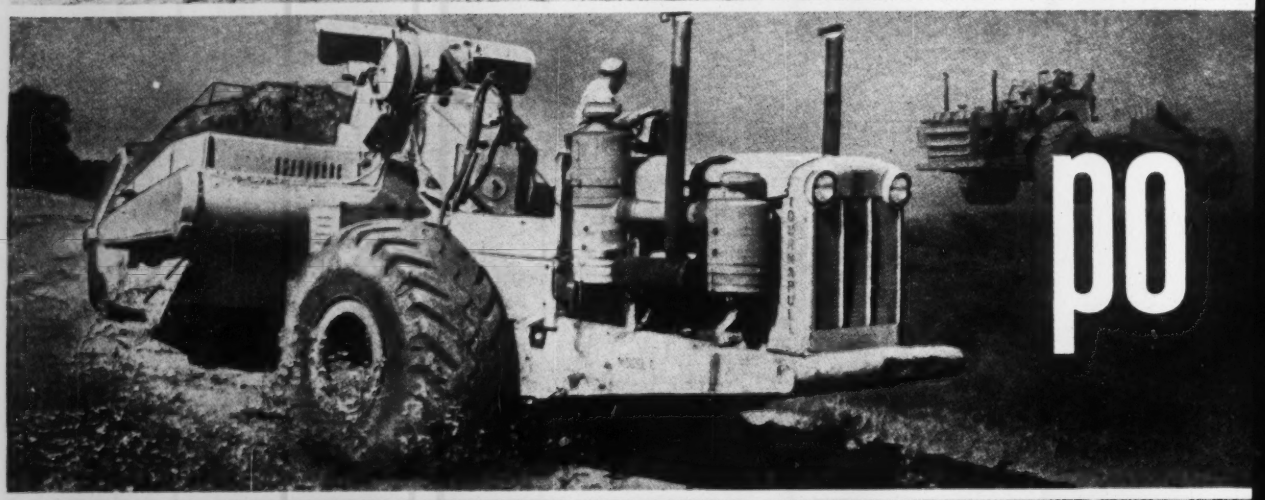
"Spotty, as a digger, you just ain't got it!"

Without realizing it, Billy has hit upon a basic truth in the excavating business. To come out on top, you've got to use the best equipment for the job.

With many factors beyond a contractor's control, choosing the right equipment becomes especially important. For this is one thing a man *can* control.

That's why so many contractors choose Bucyrus-Erie. They have learned . . . as their fathers did before them . . . that B-E machines are built for more than ordinary digging. They are built to handle the toughest jobs — and still perform better.

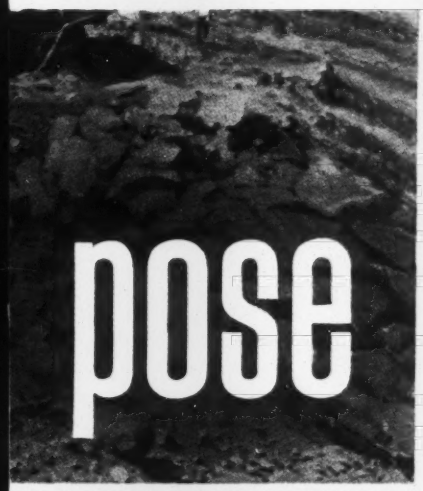
BUCYRUS ERIE



THE GM DIESEL ALL-PURPOSE POWER LINE 20 to 1650 H.P. in only 3 cylinder sizes

NON-TURBOCHARGED RATINGS

		NEW		NEW		NEW	
"2-53" 20 to 47 H.P.	"2-71" 33 to 67 H.P.	"3-53" 38 to 97 H.P.	"3-71" 51 to 118 H.P.	"4-53" 51 to 130 H.P.	"4-71" 69 to 167 H.P.	"6V-53" 76 to 195 H.P.	"6-71" 112 to 252 H.P.



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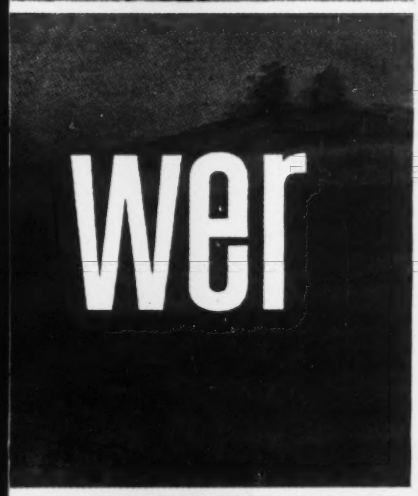

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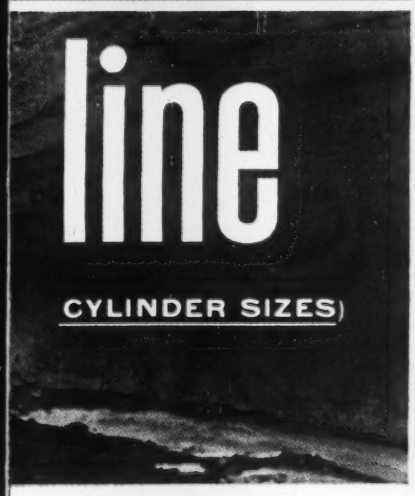


line

CYLINDER SIZES)

For the first time, all the benefits of engine standardization are available to every contractor with any type of equipment

Now, whatever the equipment, whatever the contract calls for, there's a "Jimmy" Diesel tailored to it.

So now every contractor can standardize on GM Diesel power and buy the finest equipment available.

For example, you can power a 15-kw. generator, a 265-c.f.m. compressor, a 300-h.p. scraper, a 1200-h.p. dredge, *all* with "Jimmy" Diesels. And it's *all* top-quality equipment because it *is* powered by GM Diesels.

And there's good reason for standardizing on "Jimmy" Diesel power. For these engines boast an ingeniously engineered combination of new compactness, light weight, high efficiency, durability, inexpensive maintenance and lowest parts cost.

Plus one more reason—most important of all—the *unmatched parts interchangeability of "Jimmy" Diesels.*

GM Diesel covers the whole power spectrum with *only 3 cylinder sizes*—parts that fit a 33-h.p. "Jimmy" also fit a 1650-h.p. "Jimmy." So contractors can keep a minimum stock of parts—far fewer than if they used a number of different Diesels or even standardized on any other make Diesel.

If you use Diesel power for one job or a hundred in filling your contracts—there's a "Jimmy" just for you. See your nearest GM Diesel distributor for more information or write GM Diesel, Dept. C-4, Detroit 28, Michigan. Call or write today—there's money in it.

GM DIESEL

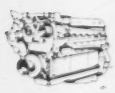
DETROIT DIESEL ENGINE DIVISION,
GENERAL MOTORS, DETROIT 28, MICH.

In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario
Parts and Service Worldwide

NEW
"6V-71"
112 to 252 H.P.

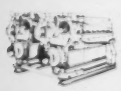
NEW
"8V-71"
150 to 334 H.P.

"6-110"
160 to 335 H.P.



NEW
"12V-71"
224 to 504 H.P.

NEW
"16V-71"
300 to 675 H.P.

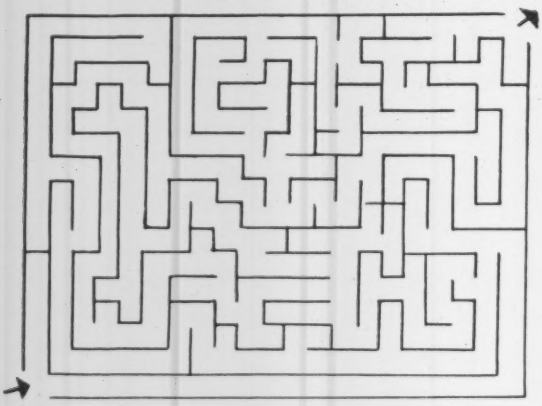


NEW
"24V-71" (Twin 12)
448 to 1008 H.P.

NEW
"32V-71" (Twin 16)
600 to 1350 H.P.
(Turbocharged—1650 H.P.)

TRICKY TRACINGS

TRY IT! Without crossing lines or retracing, how quickly can you go from one arrow to the other? See average time below.



WORK MOVES FASTER WITH **ARKWRIGHT** TRACING CLOTH

Fast, accurate tracings are just one of the many advantages you get when you use Arkwright Tracing Cloths.

Made to meet Government specifications, Arkwright Cloths feature a durable finish which resists fraying, tearing and curling . . . keeps your drawings looking fresher, longer. Its superior tracing surface is completely free of pinholes, coarse threads and other imperfections which cause feathering or blobbing. Even on detailed drawings, Arkwright Cloths assure crisp, clean lines . . . fast, accurate inking. Ten seconds is par for a trip through the maze shown above.

Save tracing time and trouble by always asking for the Cloth with the Blue Line . . . Arkwright. Send for free samples today. **Arkwright Finishing Company, Fiskeville, Rhode Island**

ARKWRIGHT
Tracing Cloths
AMERICA'S STANDARD FOR OVER 35 YEARS

New London Tower to Have Good View of the Thames

The Legal and General Assurance Society, a British insurance company, will erect a 31-story office building, London's tallest, as part of a $14-million development scheme on the Thames River at Westminster.

The project will also include an 11-story apartment house and an eight-story office building.

Foundations for the 370-ft high structure will be bored cylinders driven 90 ft down through London's blue clay. Plans specify reinforced concrete framing for all the buildings, with stainless steel and glass facing.

Site clearance has begun and construction is scheduled for completion in 1963. Ronald Ward & Partners are the architects; the general contractor is John Mowlem & Co., Ltd.

Rail Station Consolidation Would Cost $158 Million

Chicago's newest proposal for consolidating most of its rail passenger traffic calls for an enlarged Union Station. Cost is estimated at $158 million.

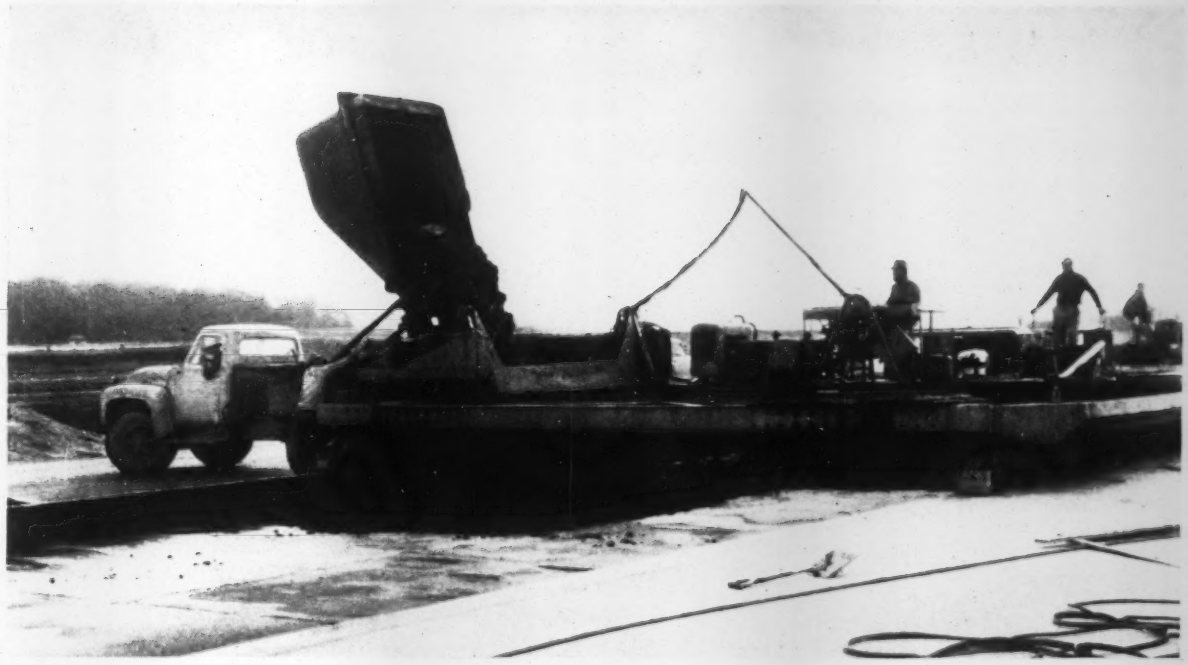
The plan was presented for appraisal to the 21 railroads involved by Mayor Richard J. Daly last week.

Under the plan, four stations—Dearborn, Illinois Central, Grand Central and LaSalle—would be consolidated with the present Union Station, which would be remodeled and enlarged.

Cost of land involved is about $50 million. The rest of the $158 million would go for reconstruction and enlargement of the station, track relocation and other facilities.

The new plan is the result of studies by DeLeuw, Cather & Co. of Chicago and Sanderson & Porter of New York.

RUNWAYS or HIGHWAYS



The Maxon Dumpcrete Concrete Spreader pays off in Higher Production for Airport Paving with its 90-second cycle!

How much time and labor could you save on paving jobs with a spreader that can place a 12′ concrete slab to full width every 90 seconds?

That's just the base placing rate of Maxon Dumpcrete Concrete Spreaders. Both single-lane and full-width models will load in 30 to 60 seconds with the fast Dumpcrete body—spread in 15 seconds—move-screed in 15 seconds.

And Dumpcrete Spreaders will place full depth, base course or top course . . . in widths adjustable from 11 to 25 feet . . . handling concrete of the lowest workable slumps.

Maxon developed the hydraulically controlled Dumpcrete Spreader to take full advantage of the benefits of central mixing with non-agitated hauling. Pair the Spreader with Dumpcrete trucks and you've got a high production team that cuts time and labor costs to the bone.

Get all the facts now. Send the coupon for the new Spreader catalog and specifications.

Send coupon for new catalog

MAXON
MANUFACTURING DIVISION

MAXON CONSTRUCTION COMPANY, Inc.
Manufacturing Division #49 • 2600 Far Hills, Dayton 19, Ohio

Please send me the new Dumpcrete Spreader catalog with specifications

NAME_____
TITLE_____
FIRM_____
ADDRESS_____
CITY_____ ZONE_____ STATE_____

Steel framing and concrete wall reinforcing must be electrically connected . . .

Structurals Play an Electrical

The steel-framed, concrete-enclosed building that will house the most powerful radio transmitter in the U.S. may look commonplace, but it has hidden features that make it different.

Large areas inside will be completely shielded electrically with copper lining. And all metal—in floors, ceilings and walls—is electrically grounded.

The 25-ft high, 25,000-sq ft structure is being erected at the new Naval Radio Transmitting Station in Cutler, Me. It is located at the center of a 2,850-acre peninsula, over which will be spread an array of 26 antenna towers.

• **Unusual structural design**—Though the building has a steel frame, the exterior walls will share some of the load. The roof was designed as a two-way reinforced concrete slab. The 25-ft-high load-bearing walls are made of 12-in.-thick, cast-in-place concrete. This thickness was chosen to ease placement of concrete between the forms and two layers of reinforcement, to give added stiffness to the walls and to improve their insulation value. (The building will be air conditioned to keep temperature and humidity of transmitter operating areas within acceptable limits.) The walls are flush with the structural steel columns, which are 15 ft c-c.

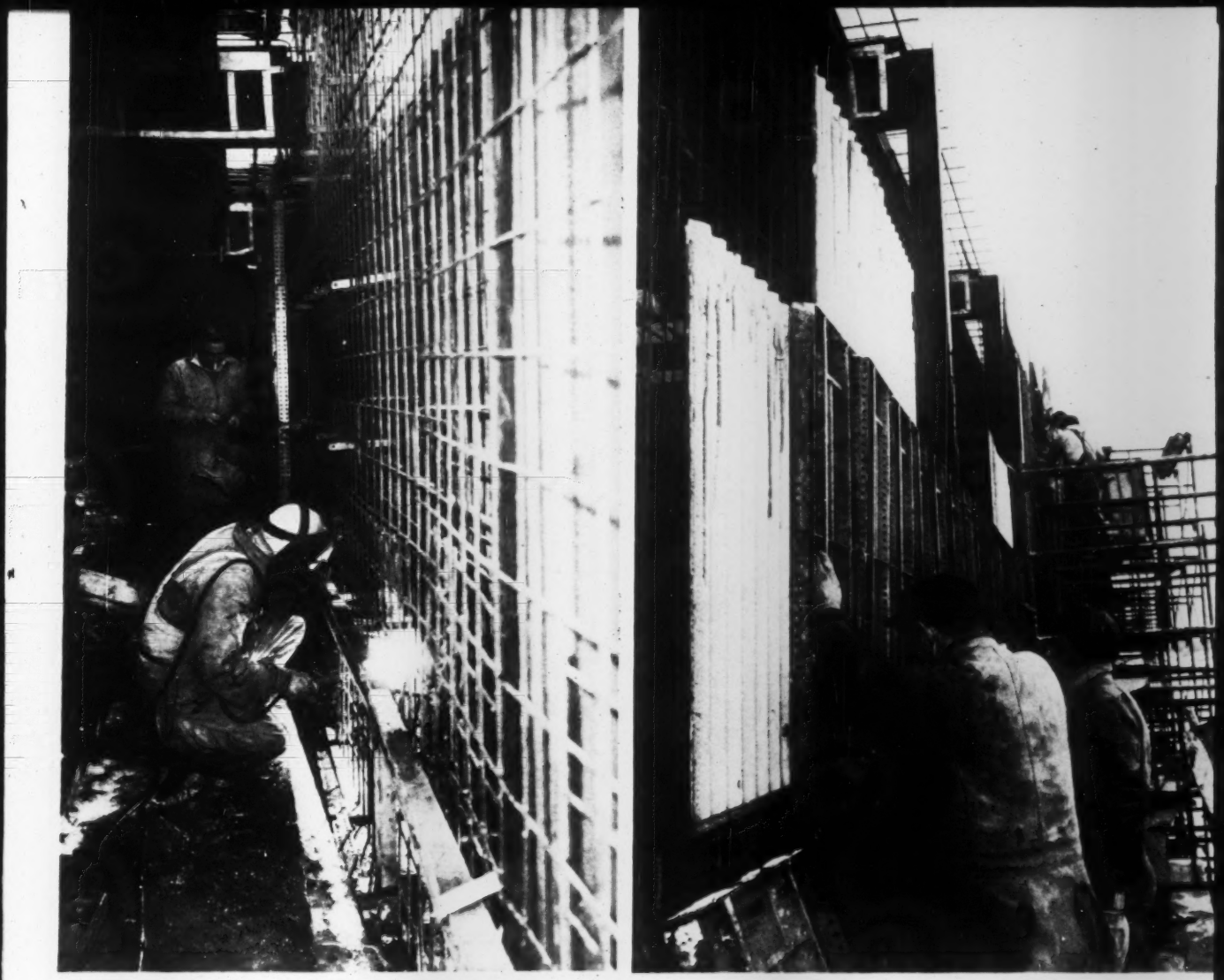
For appearance's sake, the outer face of the walls is corrugated vertically. This pattern was impressed in the concrete by using corrugated asbestos cement panels for a form liner.

• **Reinforcing grounded**—The concrete walls are reinforced with a layer of 6 x 6, 0-0 welded wire fabric near each face. The designer chose fabric for two reasons:

• Since all metal in the building has to be grounded, metal-to-metal contact in the walls has to be positive; so reinforcing has to be welded at intersections.

• Placing 8 x 10-ft mats of fabric reinforcing in one piece saves time on the job and assures uniform clearance from wall faces.

The 25-ft-high walls were concreted in 8-ft lifts in reusable steel forms. The asbestos-cement form liner, in 42-in.-wide by 8-ft-long sheets, was fastened with wire ties until pressure



So jumpers are brazed between metal components. Corrugated form liner shapes the walls.

Role in Transmitter Building

of the concrete held it in place. The liner was coated with a lacquer-type bond breaker to prevent the concrete from sticking to it.

In the lower portion of the walls, reinforcing mats were placed by two men; for the upper portion, a crane was used. Cross wires of each mat were welded at all laps between sheets. At steel columns, mats were welded to these supports at 4-ft intervals. In addition, brazed jumpers were inserted between inner and outer layers of reinforcing to connect them electrically.

Similar welding and grounding was necessary for fabric reinforcing in partitions, ground-floor slab and concrete encasement of columns.

Around the periphery of the building, 5-ft-long copper-clad steel rods were driven into the ground 5 ft apart and connected by copper buses to the structural and reinforcing steel system. Even steel lockers and toilet partitions were grounded. The grounding circuit was completed by connecting a buried network of copper wires between the copper buses and the antenna ground system.

• **Cold-weather concreting**—Concrete work was carried out during the winter, except when the temperature dropped below 10F. Water at 100 F and heated aggregate was used in the truck-mixed concrete. An air-entraining agent also was incorporated. Space heaters were used in the tarpaulin-enclosed structure to maintain 70F for the first three days and 50F for the next four days after placement. Concrete was required to have a compressive strength of 3,000 psi in 28 days.

The concrete roof was cast on forms supported on adjustable joists. These eliminated the need for shoring.

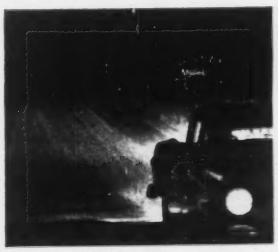
Capt. A. C. Husband is First Naval District (Boston) Public Works Officer in charge of construction. Capt. J. R. Burke is resident officer in charge of the transmitter project.

Design of the building was by a joint venture of Hayden, Harding & Buchanan, Inc., Boston, and James W. Sewall Co., Old Town, Me. Consolidated Constructors, Inc., New York City, is the general contractor.

FOR HIGHWAYS WITH
A SOLID FUTURE

Concrete

On the Ohio Turnpike, they paved with CONCRETE...



Concrete's high reflectance saves on lighting costs. For an average 10-mile expressway, concrete can reduce electric bills as much as $10,000 a year. And only half as many light fixtures are needed.

saved $7,181,898 in first cost alone!

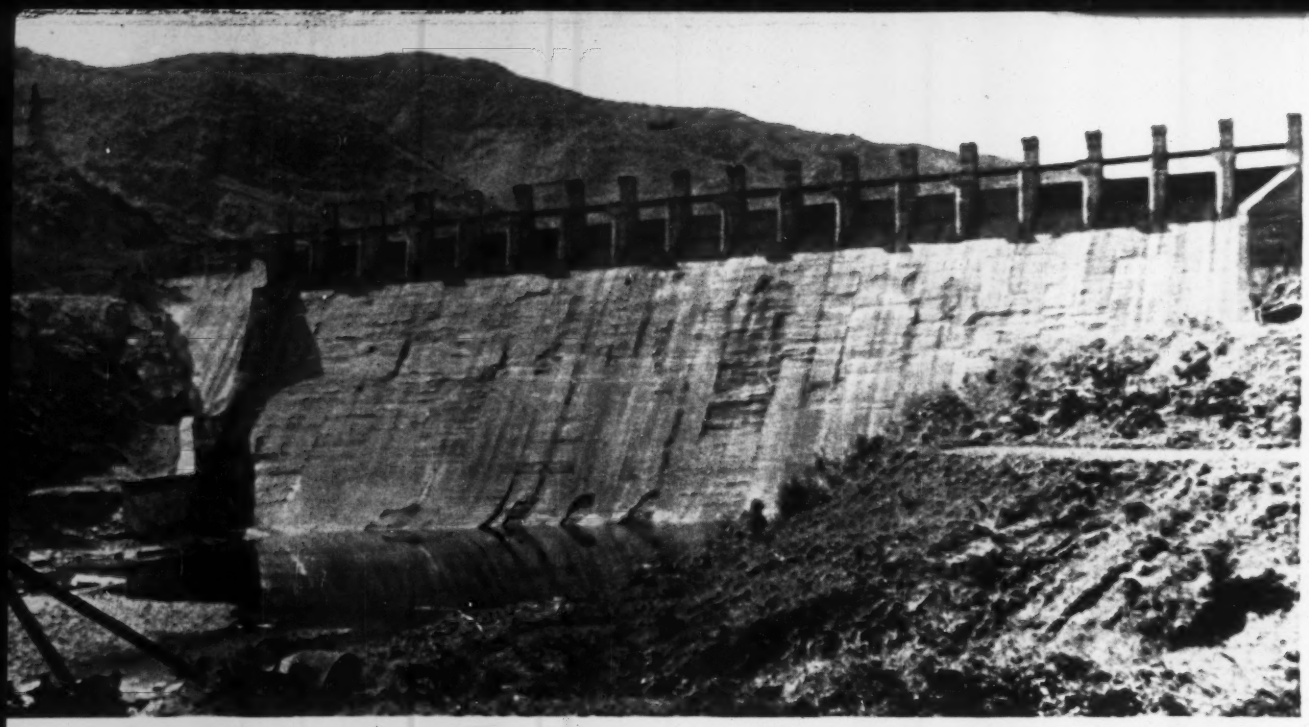
Studies of pavement designs proved in advance that only concrete could give the needed strength at so low a cost. Now records show big maintenance savings, too. The consulting engineers on the Ohio Turnpike estimated that pavement maintenance for the first five-year period would be $0.02 per sq. yd. per year if flexible pavement were used, and $0.01 per sq. yd. per year if rigid pavement were laid. Concrete was chosen for the entire Turnpike.

Twenty million vehicles have travelled it the first two years, yet actual maintenance costs to date are only slightly more than *half the estimated amount!*

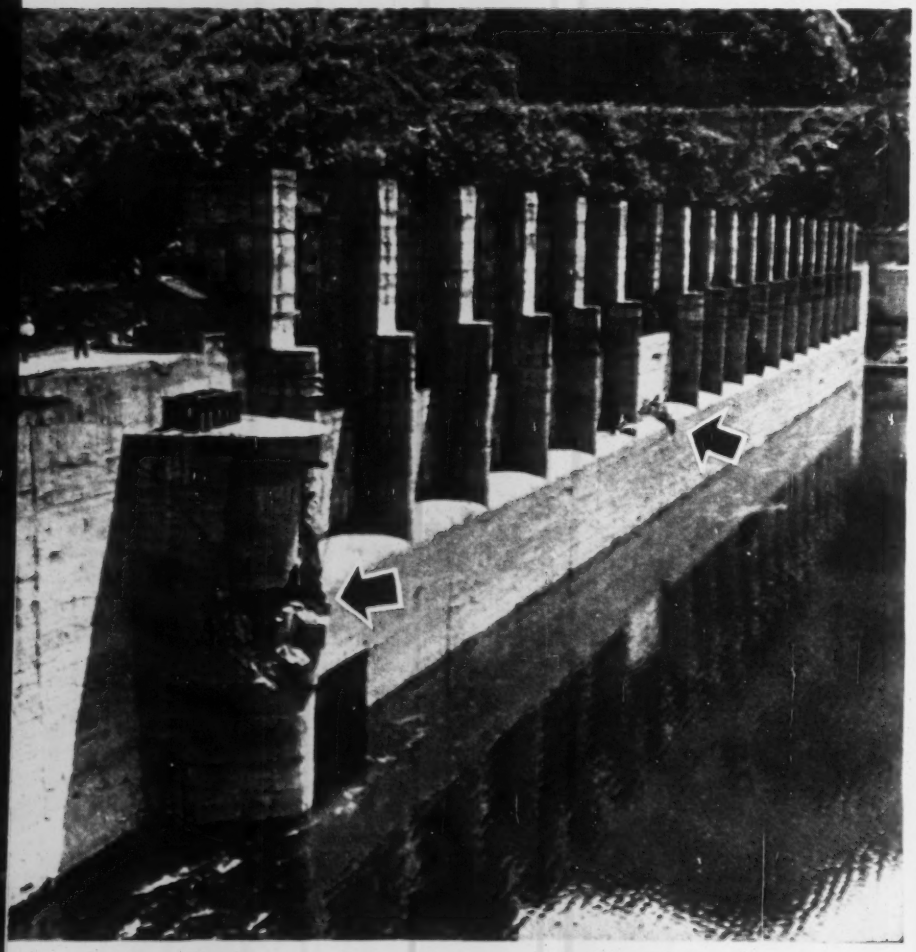
And maintenance costs will *stay* low. Concrete—because it is rigid—is the only material that has no "moving parts" to cause hidden wear. It never oxidizes—no surface treatment needed every few years. And only concrete's load-bearing strength can be computed mathematically to match future traffic, give an expected 50 years and more of safe, smooth driving.

All good reasons why concrete is the only thrifty way to build high-traffic-volume highways like those for the Interstate System.

PORTLAND CEMENT ASSOCIATION *A national organization to improve and extend the uses of concrete*



Pits in spillway face of Korea's Hwachon Dam resulted from erosion and wartime bombing.



Torpedo damage (arrows) was inflicted by U. N. Planes.

War-Torn

O. Newell Parker

Chief Project Engineer
International Engineering Co.
San Francisco, Calif.

Korea's Hwachon Dam—a war casualty—has been returned to useful service.

The 267-ft-high gravity structure on the North Han River just above the 38th Parallel was attacked by both sides during the Korean conflict.

When the American company hired for the repair job got to the site, it found a dam that had been poorly built by the Japanese under wartime pressure during World War II and then knocked out of operation six years later by military action.

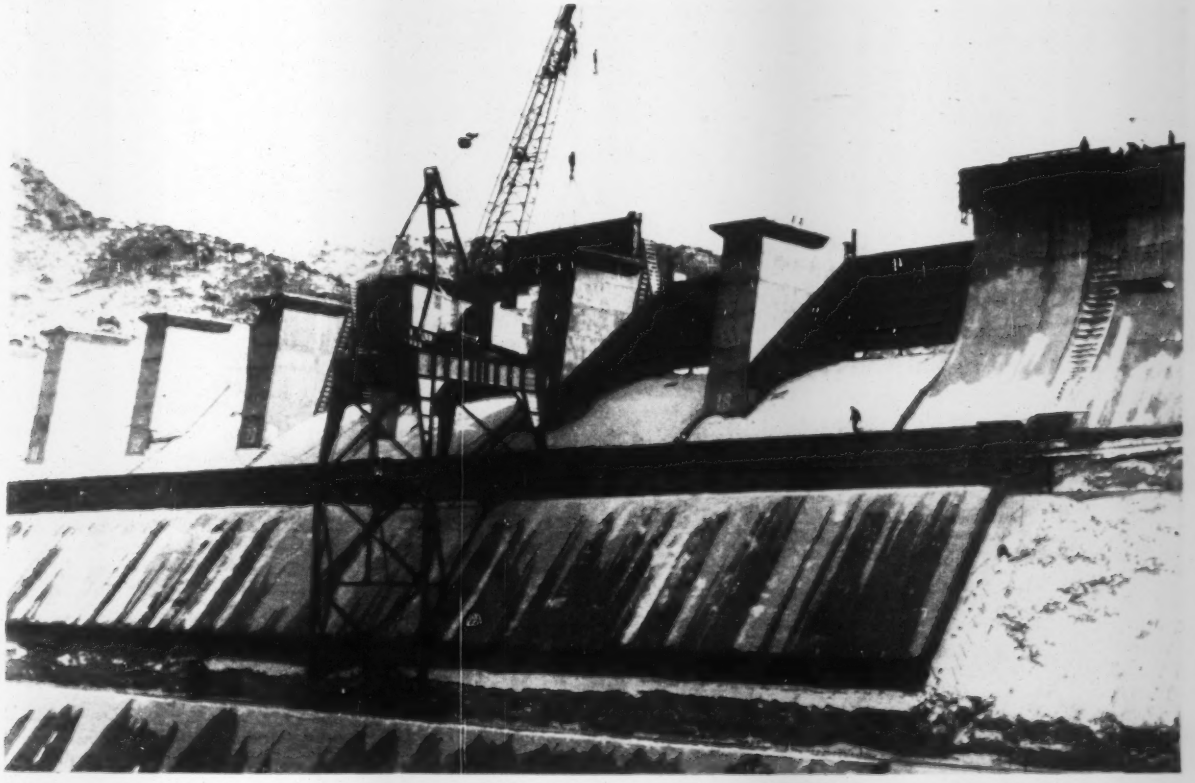
The poor condition of the dam was apparent on first sight. The spillway face was badly eroded, piers were cracked and six gates blown out.

The Japanese constructors, hurrying to finish the dam and plagued by material shortages, had made a field revision of plans. They had raised the crest of the dam 1.5 meters and reduced the size of the eighteen spillway gates from 7.5 x 12 meters to 6 x 12 meters.

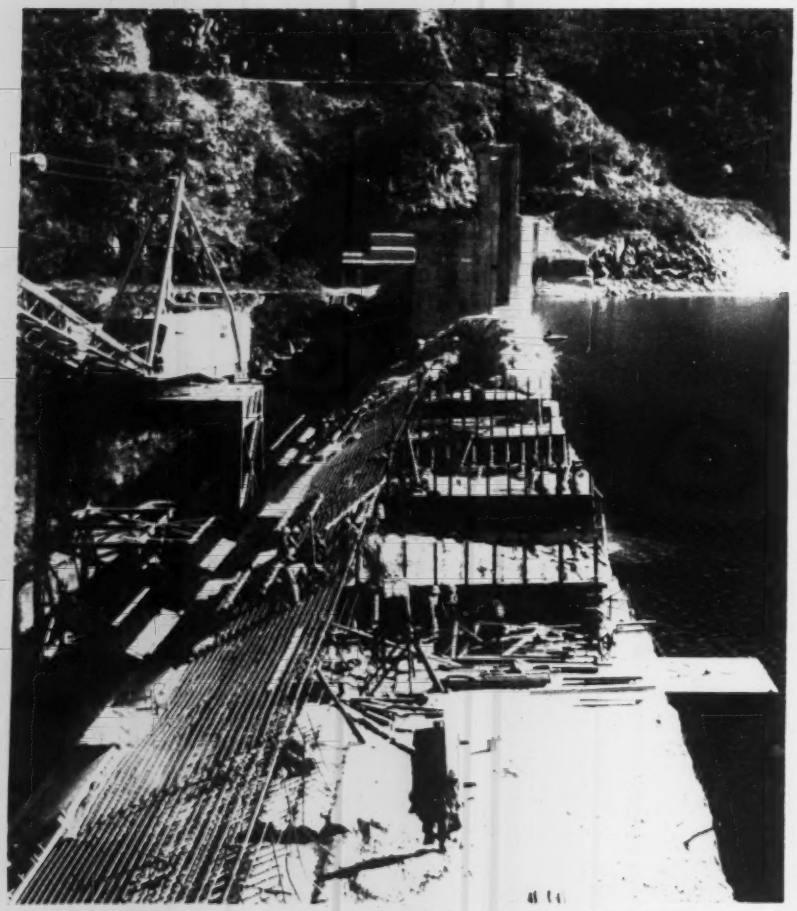
The revisions changed the flow line of the spillway, leaving a flat area between the crest and face sections of the ogee curve. This helped cause rapid

Peacetime blasting by contractor takes out old piers so crest of dam can be lowered.

Dam Gets Big Repair Job



Whirly crane's leg extensions eliminated need for a supporting trestle across dam face.



REINFORCING STEEL is placed for new spillway and crest concrete surfaces. What's left of demolished piers can be seen in background.

erosion of the spillway face, with some pockets more than 6 ft deep.

Then North Koreans blew out six gates and United Nations forces hit the dam with three 2,000 lb. torpedoes.

The powerhouse, switchyard, and power transmission line also needed a great deal of repair and replacement of war-damaged or missing equipment.

With power the greatest need of the wrecked South Korean economy, repair of the generating equipment and transmission went on simultaneously with the dam work. Priority was placed on getting power into the starving Korean grid even before completing repairs.

Concrete stop logs temporarily replacing the gates blown out by the North Koreans were removed. The remaining original spillway gates were cut in half so they could be lifted by crane and taken to the gate yard for rebuilding. Demolition by blasting then started on the crest and piers, working across the dam from the left abutment.

Spillway gates 1 and 18 were eliminated because faulty training-wall construction had made them dangerous to use. The required spillway capacity was provided instead by enlarging the four middle gates to 8 x 12 meters.

A new wearing surface with a minimum thickness of one meter was placed on the spillway face. The apron was rebuilt and a new cutoff wall installed at the downstream end of the apron.

Some of the first concrete placed was used to repair the dam face so it could support a 25-ton whirly crane. The crane was fitted with extensions on its two downstream legs to simplify supporting it on the sloping face. Working across the face of the dam parallel to the crest, the crane placed all concrete for the crest, piers and spillway face. Mobile cranes had to be used for the spillway bucket, apron and lower training walls.

A portion of the old crest on the right side was removed to accommodate spillway flows so construction could proceed on the left and center sections of the spillway. Later the reservoir level was reduced sufficiently by power discharges through the two turbine units to eliminate spillway discharge.

As the new concrete face was extended, a truck trestle was built across the face of the dam to haul concrete and other material to the crane.

Concreting continued during the winter. Some 41,000 cu yd (of 85,000 cu yd for the whole job) were placed in sub-freezing weather—as low as −15F. Type II cement, containing about 20% pozzolan, was used. Mixing water was heated to 212F. Aggregate was preheated. And steam was introduced under tarpaulins covering fresh concrete. Under this procedure, none of the cold-weather concrete was lost.

The raw rock at the aggregate plant was heated in a steam tunnel built over the conveyor belt, and wash water for the screen and classifier was heated to prevent freeze up at this point in production.

The batch plant was equipped with steam heating coils in the storage bins and at the slide gates to the reclaiming tunnel. With two 2-cu-yd mixers, the plant had a capacity of 100 cu yd per hour based on a 60-second mixing cycle.

Meanwhile, work continued in the powerhouse. Originally the Japanese had planned to install four 27,000-kw generating units, with the fourth providing only a limited amount of secondary power until another dam could be completed upstream to regulate reservoir levels. Since the upstream drainage area is almost entirely in North Korea and there are no prospects that the Communists will allow upstream development, the fourth generator unit was ruled out.

Two units had been installed and the turbine of the third unit was set before the Japanese suspended work during World War II.

The tunnel branch that was planned to serve the penstock for the fourth generator was closed by a concrete plug and the orifices for the surge tank for the third and fourth generators were modified to suit single unit operation. Openings in the powerhouse substructure for the abandoned unit's draft tube and relief valve outlet were sealed also.

Almost all switchyard equipment needed replacing. Machine-gun fire had damaged it severely. The original transmission line consisted of a single 161-kw circuit on double-circuit steel towers. This circuit was energized to provide power from the project while a second line was strung. The route of the line was so rough that modern stringing equipment and methods could not be used. Cable had to be carried in by hand. After the new line was completed, the old line was repaired.

Cost of the rehabilitation was about $13 million. The International Engineering Co., San Francisco, made the investigations and engineering design. Morrison Knudsen International Co., Inc., San Francisco, was the contractor. O. Newell Parker was project manager.

STEEL-WELD FABRICATION . . .

Illustrated above is The Earl L. Holloway Dam and Reservoir constructed in Genesee County, Michigan. Pivoted Drum Gates, Tainter Gates and other Steel Components for this Water Supply Project were fabricated, machined and erected by Mahon. Inset is one of the Drum Gates with Stainless Steel Pivot Bar.

STEEL COMPONENTS

for Heavy Construction Projects!

Mahon's fabricating experience in this field ranges from light weight Drum Gates and Tainter Gates, for the relatively small project illustrated above, to giant Lift Gates, Miter Gates, Tainter Gates, Roller Gates and Spillway Gates weighing hundreds of tons.

Mahon has fabricated and machined Steel Components for six Dams and four Locks in the Mississippi Flood Control Project, and Spillway Gates for the Fort Peck Dam . . . and, more recently, Lift Gates and Miter Gates for Lock Mechanisms in the St. Lawrence Seaway Project.

When you need fabricated steel components for Locks, Dams, Highway or Power Projects, you will find in the Mahon Company a unique source for heavy steel plate and structural units in either welded or riveted construction . . . a fully responsible source with unusual facilities for fabricating, machining, handling and erecting; and a long and enviable performance record covering a period of more than thirty years.

THE R. C. MAHON COMPANY • Detroit 34, Michigan

SALES-ENGINEERING OFFICES in DETROIT, NEW YORK and CHICAGO

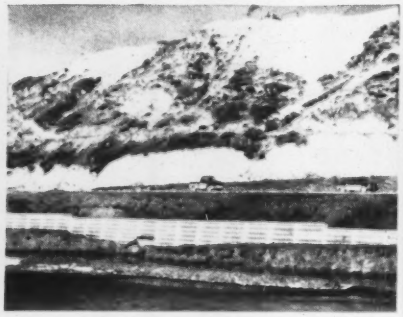
MAHON

Right-of-Way "Squeeze"

SOLVED WITH ARMCO RETAINING WALL

The wide right-of-way requirements of new Interstate 90 created a big squeeze in western Montana. At one point the four-lane highway threads its way between a hill and an important irrigation diversion channel in the Clark Fork River. Conventional fill—built up wide enough to accommodate the right-of-way—would have encroached on the channel. The solution: a 350-foot long Armco Bin-Type Retaining Wall. It holds the steep fill, prevents erosion, relieves the right-of-way squeeze.

Highway and railroad builders have been using Armco Walls for important earth control jobs for more than 20 years. The unique design, featuring a series of interconnected bins, offers unmatched stability. And since there is no danger of cracking or breaking, long, maintenance-free service is assured. For complete data, send the coupon for your copy of the Armco Retaining Wall catalog. Armco Drainage & Metal Products, Inc., 6069 Curtis Street, Middletown, Ohio.



Far Right: Over-all view of project shows Armco Wall ready for backfilling.

Right: Interconnected bins are bolted together from easy-to-handle units. Here two men are positioning a stringer section for the back of a bin.

Below: A look behind the wall shows how bins are filled with well-compacted material before fill is built up behind and on top of wall.

Send my copy of the 16-page catalog, Armco Bin-Type Retaining Walls.

Name _____

Title _____

Organization _____

Street _____

City _____ Zone _____

State _____

on Interstate 90

Armco Bin-Type Retaining Wall will prevent fill for wider highway from encroaching on important irrigation canal.

ARMCO DRAINAGE & METAL PRODUCTS

Subsidiary of ARMCO STEEL CORPORATION

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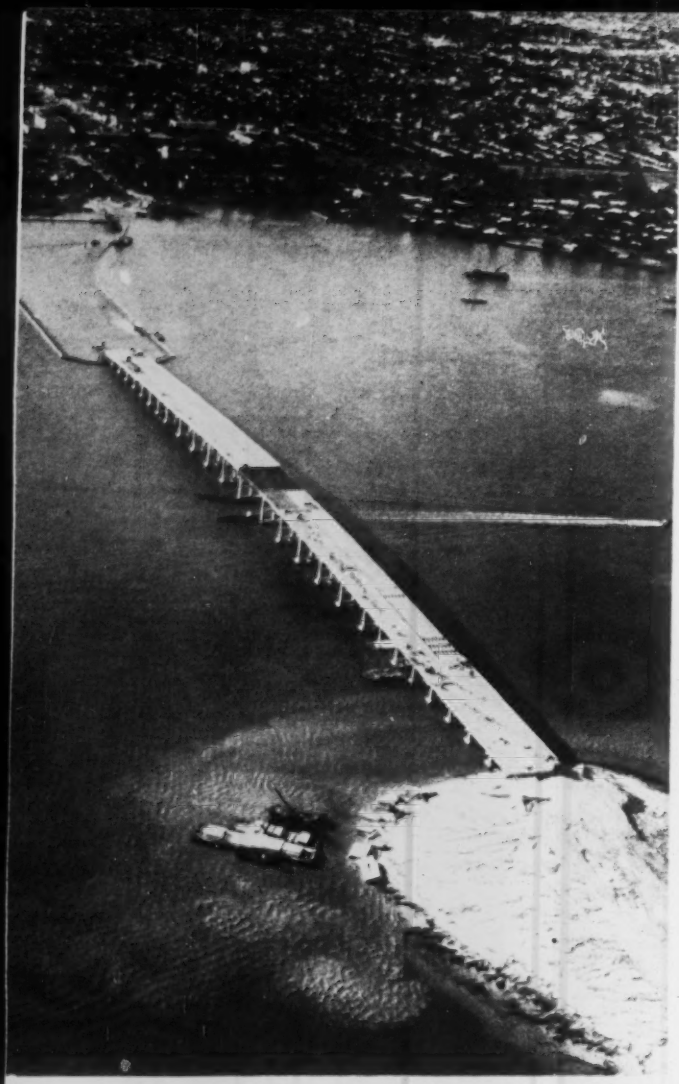


Bridge and concrete bulkhead work on Miami's 36th St. Causeway is speeded by such things as . . .

Little Gimmicks Mean Big Savings

Contractors and engineers on Miami's 36th Street Causeway are saving time and money with these construction oddities:

- Floating steel walers to support pile cap forms.
- Pile-driving templates with pontoon feet, which serve as foundations and floats.
- Grout retained under water within "sausage casings."
- An unusual traveling gantry designed to handle 42-ton prestressed beams on a 98-ft span.
- A highly efficient sectionalized pier form.

• The job—The 36th Street Causeway is a six-lane, $10-million crossing of Florida's Biscayne Bay between Miami and Miami Beach.

The 3.2-mile-long causeway includes two shipping lane bridges totaling 3,288 ft; almost 2.5 miles of bulkheaded hydraulic fill; two highway overpasses; and, under separate contract, four interchange bridges.

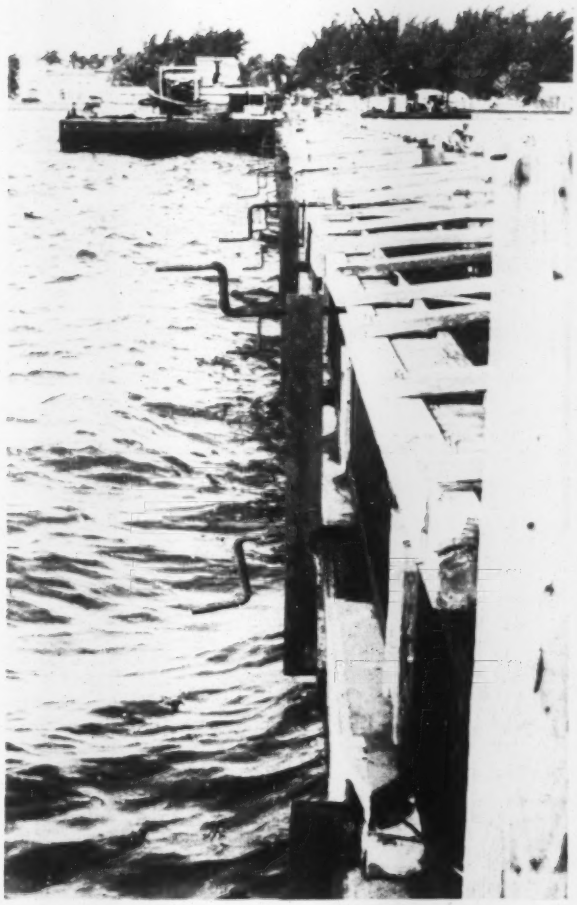
The shipping lane bridges are on opposite sides of the bay. The larger of the two, 2,150 ft long, is on the west side, starting about 2,000 ft outside the Miami shore line. The structure has sixteen 65-ft spans, ten 98-ft spans and a channel span of 130 ft. The channel span, which is a plate girder, clears MHW by 55 ft.

The east bridge starts about 3,400 ft west of the Miami Beach bulkhead line. It's 1,138 ft long and has a 98-ft channel span that clears MHW by 35 ft. In addition it has 16 other spans, each of 65 ft.

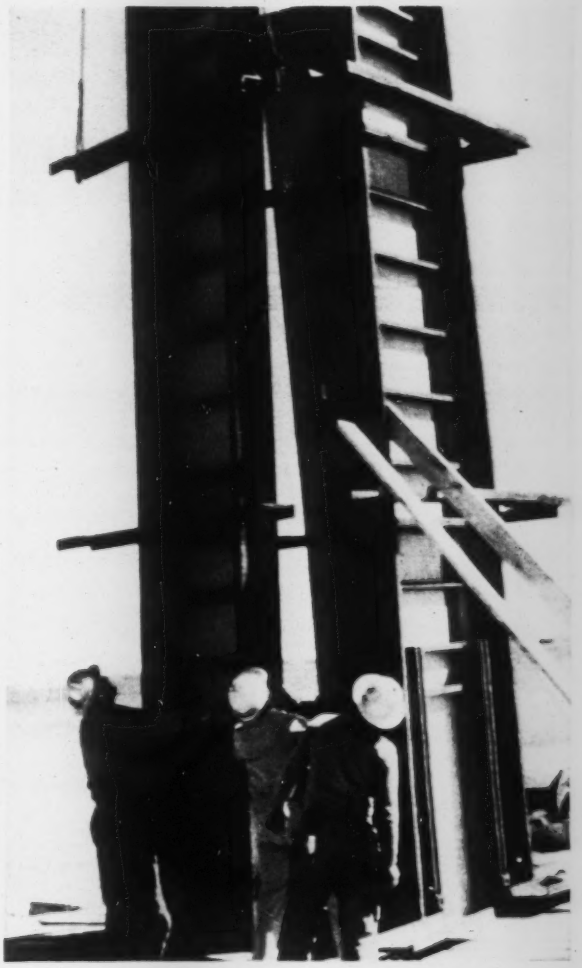
On both bridges the 65-ft and 98-ft spans have prestressed, precast concrete stringers. In all, there were 448 65-ft beams, each weighing 17 tons, and 154 98-ft beams, each weighing 42 tons. The lighter beams were placed by barge mounted cranes.

• Traveling gantry places beams—The traveling gantry was used to place the 42-ton beams. The rig was designed to move from side to side on a track consisting of two deep beams. These beams were U-bolted to the pier heads and were long enough to extend beyond one side of the pier.

Beam-carrying barges were spotted under the overhang, and the gantry, using a two point lift from two winches, raised the beams one at a time to a point above the pier head. The gantry



cap forms held by floating walers . . .



and pier forms with one-pin connections.

on Biscayne Bay Crossing

then winched itself sideways for exact placement of each beam.

The channel piers on both bridges are supported by a total of 200 steel piles, 14BP (H-section), averaging 60 ft in length. All other piers rest on 20-in.-square reinforced concrete precast piles.

• **Pile-driving template**—For simple and accurate spotting of these piles, the contractor, Heavy Constructors, Inc. of Fort Lauderdale, Fla., built an unusual template.

Almost 22 ft wide and 90 ft long, the template could accommodate up to 42 piles at one time. Thus, with a single setting of the template it was possible to install the foundation piles for an entire pier.

In designing the template the contractor had to consider five points: horizontal alignment, stability, mobility, weight and—most important—removing the frame from the batter piles after placement.

To permit horizontal alignment, the template was constructed with elongated hollow boxes set vertically at each corner. Through these boxes were placed the main legs of the template. A horizontal beam extending from the top of each leg supported a block and tackle, which was connected to a hand winch mounted at each corner of the main frame.

With the legs seated on the bottom, a few turns of any one winch raised or lowered a corner of the frame to the desired elevation.

Stability and mobility were achieved by attaching a hollow steel pontoon beneath the base of each vertical leg. The pontoons, rectangular boxes 4x4x2 ft, were attached like feet with the 2 ft side vertical. Under the full weight of the assembled template, the boxes provided a 16-sq-ft base for each leg. With the template lightened for transport the pontoons floated the legs upward through the guide boxes, thus providing clearance between the legs and the bottom of the bay.

To lighten the frame for transport and to clear the batter piles, the internal guides were constructed in sections. Each section consists of a top and bottom guide wide enough to span the template. At the four corners of each section are vertical angles that form legs. When assembled, the legs are seated in box-like receptacles welded to the top flange of the main frame. For disas-

SHEET PILE BULKHEAD ends in an unsual geometric pattern. Diagonal tie-backs are precast, prestressed concrete anchored in the cast-in-place caps.

sembly, the sections are merely lifted off.

• **Floating concrete plant**—While most of the concrete units embodied in the 36th Street Causeway are precast, the pier pile caps, the piers, and the sheet-pile caps are among the items being cast in place.

Since these components require more than 28,000 cu yd of concrete, this calls for an appreciable amount of water-borne equipment.

Among this equipment is one barge set up as a floating concrete plant. It has two cranes, a batch plant and two truck type mixers with a total capacity of 25 cu yd per hr. It is serviced by a floating supply depot—a barge set up to carry 8,000 gallons of fresh water for concrete and 400 barrels of cement in a silo. (This same barge also carries tanks for more than 5,000 gal of diesel fuel and 1,600 gal of gasoline.)

The forms for the piers have been designed for fast but simple forming and stripping. Each side of a pier leg is formed by a single panel consisting of plywood mounted on a heavy metal frame (see picture). The frame looks like a ladder with rungs 1 ft, 5 in. apart. The vertical members are 10-in., 15.3-lb channels. The "rungs" are 4-in., 5.4-lb channels. Welded to the outside of the vertical channels at 8-ft intervals are locking strips. These strips are 10-in., 15.3-lb. channels set horizontally across the vertical members of the panels and extending beyond them.

On one panel the channels are face up; on the adjacent panels, face down. When positioned, the locking strips of each panel overlap the locking strip of the adjacent panels and are face to face. A single pin placed through a hole in each of the overlapping channels sets the form.

To reduce the number of forms needed, the units are designed so that the bottom of the low pier forms can serve also as the top of the high pier forms.

In constructing the bulkhead, the contractor faced two tough problems; expediting the capping; and meeting a specification requirement for grouting the space between sheets to prevent loss of fill.

Economical solution of the problems was imperative because of the tremendous amount of bulkheading in the job. In the three causeway areas—2,040 ft on the west, 3,400 ft on the east, and 7,506 ft between the two channel bridges—more than three million cu yd of hydraulic fill—principally sand and oolite—is being placed by the Arundel Corp. Protecting this fill from scour will be concrete sheet pile walls totaling 5½ miles in length.

The sheets are reinforced concrete, 30 in. wide; 8-, 10-, and 12-in. thick, and varying in length from 12 to 26 ft. They interlock with a tongue and groove below the bottom of the bay. From the bay bottom to the top of the wall, the sheets butt at the edges, but both sheets are grooved.

The design engineers, fearing that the tongue and groove joint would not be tight enough to prevent leaching of the fill, called for the double groove with the stipulation that it was to be grouted.

• **Grout-filled "sausage"**—To keep the grout from being washed out of the grooves during placement, the contractor devised an elongated plastic "sausage casing." It just fills the space made by the double grooves. The bottom end of the closed casing is poked into the hole until it rests on the top of the tongue below.

To fill the casing, a 2-in. plastic hose is inserted into the top, which projects above the sheet piles. Grout is bucketed through a funnel and through the plastic hose into the casing until the void is completely filled. The top of the casing is then tied off and any surplus casing is removed. A patent is pending on this process with rights held by The Tamarao Corp., Fort Lauderdale, Fla.

(*Turn the page*)

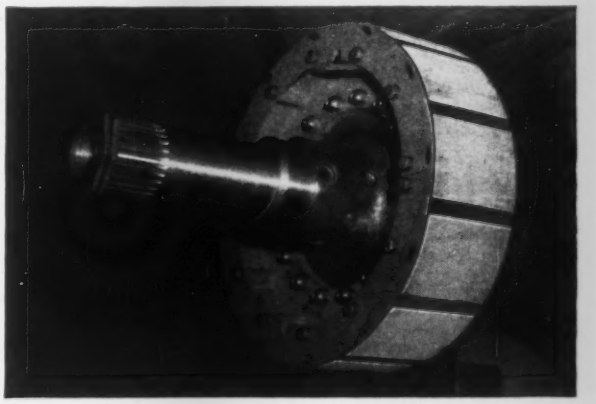
World's biggest scraper units need... and use... B.F. Goodrich Hi-Torque brakes

WEISS DAM, ALABAMA—A struck capacity of 40 cu. yds. makes the M-R-S Model 250-HW tractor-scraper the world's largest hydraulic tractor-scraper combination. And with powerful 600-h.p. engines pushing them to speeds of 34 miles an hour, these units need the finest stopping power available.

That's why M-R-S uses new B.F.Goodrich Hi-Torque Brakes. Now at work on the Weiss Dam Project, M-R-S scrapers move heaping loads at high speeds along a ¾ mile haul. And they make each round trip with complete safety, because B.F.Goodrich Hi-Torque Brakes stop *twice as fast* as conventional brakes, with less chance of brake fade.

Exclusive "full-circle" stopping power provides more uniform lining pressure than any other off-road drum brake. In addition, B.F.Goodrich Hi-Torque Brakes have an automatic adjusting feature which eliminates maintenance throughout lining life. Lining changes can be made with standard hand tools, and no lubrication is necessary.

B.F.Goodrich Hi-Torque Brakes on the M-R-S 250-HW tractor-scrapers enable operators to control the placement and depth of spreads, even on steep grades. So next time you buy tractor-scrapers, dump trucks or any other wheeled off-road vehicles, remember that B.F.Goodrich Hi-Torque Brakes reduce cycle time—provide greater safety—cut expensive maintenance. Ask your equipment manufacturer for details, or write: *B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Dept. EN-49, Troy, Ohio.*



B.F.Goodrich *Hi-Torque brakes*

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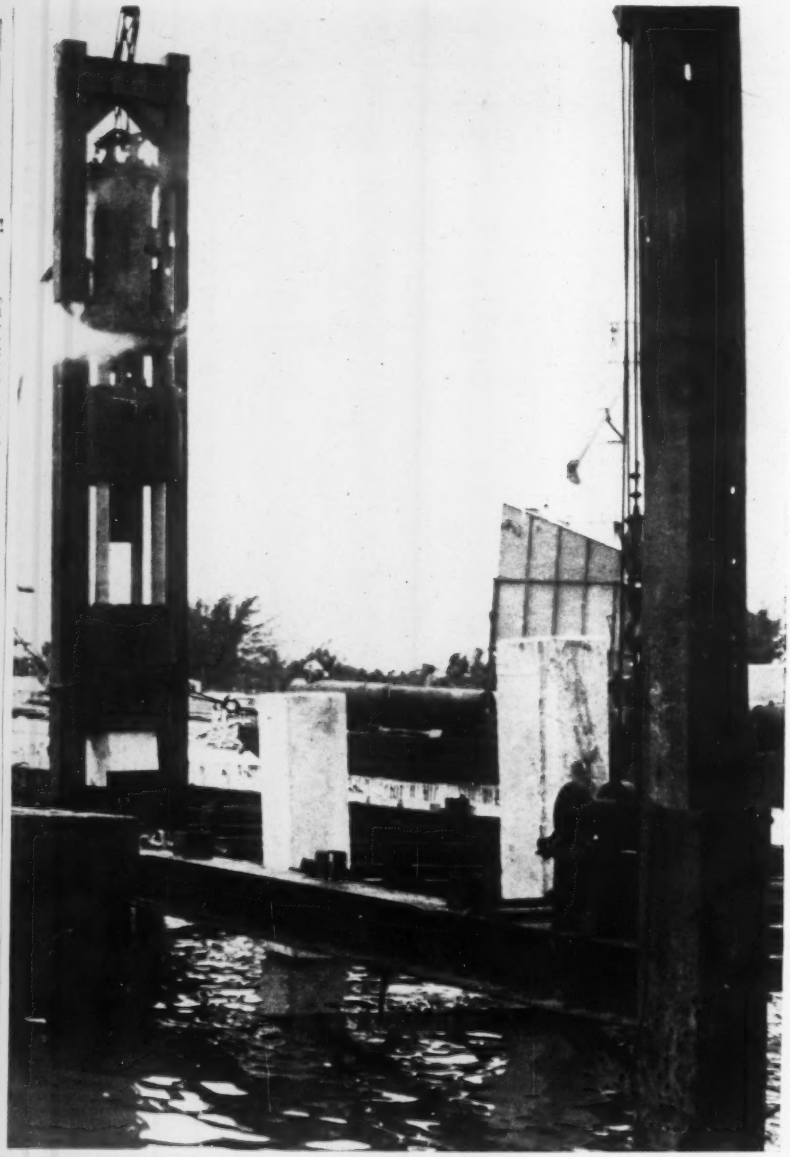

PILE TEMPLATE FRAME is kept level by hand winches mounted at corners. Its removable pile guides clear batter piles and lighten the unit for transport.

• **Floating walers**—To expedite capping the 30,000 wall feet of sheeting, the contractor built several pairs of unusual floating walers (picture). They're rectangular steel boxes 12 in. x 14 in. by 50 ft.

The walers are attached in pairs on opposite sides of the sheet piles by bolts running through holes cut through the sheets. Forms are then set on top of the floating walers. Angle-iron uprights welded to the backs of the walers provide a pressure point for threaded adjusting screws. The screws, shaped like jack-handles, can be moved in or out to tighten the forms against the spacers or to permit stripping.

In moving from section to section the walers are dropped into the water and floated to their next position. When not in use, they are simply tied to the bulkhead and left floating.

The bay crossing work was started in November of 1957 and is scheduled for completion by January 1, 1960. J. R. Bailey is general superintendent for Heavy Constructors, Inc. Milton E. Cannon and M. W. Geiger are field superintendents. Joseph B. Rice is field engineer. H. M. Langford, vice president of the firm has over-all charge of the project.

The work is being done for the Florida State Road Department, designer of the structure. On the project for the State is H. M. Post, resident engineer. Allen Gray, Stanley Szydlo and Buck Wilmont are project engineers.

"PRESSURE-TREATED WOOD" SPECIFICATION FILE

Pressure-Creosoted Wood for Highways Stretches Tax Dollars

Pressure-creosoted wood is an accepted and proved material for guardrail posts, lighting poles, fence posts, and sign posts. For these accessories and other highway construction such as bridge and foundation piling, you need a material that is low in first cost and low in maintenance costs . . . a material that is attractive, strong and durable . . . one that resists weather, insects and fungi.

Pressure-creosoted wood offers all these advantages. Wherever foundations, supports or bridge pilings are needed, pressure-creosoted piling often makes possible substantial savings—releasing funds for other construction.

USS Creosote

Merritt Parkway, Connecticut—Pressure-Creosoted domed-top posts with reflector buttons and steel cables provide attractive, strong, safe guardrails

Recommendations for specifying pressure-creosoted wood

This material was taken in part from a report by the Highway Committee on the American Wood Preservers Institute.

LUMBER—For load-bearing structural members use any species of stress-rated lumber; that is, lumber that has been graded for the assignment of working stresses. Grading of structural lumber for stress rating should comply with American Society for Testing Materials designation D-245, *Methods for Establishing Structural Grades of Lumber*.

Sizes of sawed lumber, rough or dressed, should conform to American Lumber Standards.

Lumber and timber may be ordered rough or surfaced. Where surfaced lumber is ordered, a standard dressing—S2E, S2S or S4S—should be specified. A timber surfaced on two sides, S2S, has the same thickness as that surfaced on one side only.

The great bulk of stress-rated or structural lumber and timber is manufactured from southern pine and from West Coast woods—Douglas fir, hemlock. Standard grading rules for the southern pines are published by the Southern Pine Assn., P.O. Box 1170, New Orleans 4, Louisiana, and for Douglas fir and western hemlock by the West Coast Lumbermen's Assn., 1410 S.W. Morrison St., Portland 5, Oregon.

BRIDGE AND STRUCTURAL LUMBER—Select from the applicable regional rules a suitable grade of lumber or timber; specify species, show the pertinent paragraph number, and designate the grading rules to which reference is made.

PRESERVATIVES—Creosote is the preservative most extensively used for treating wood in contact with the ground. Creosote-coal tar solutions in heavy retentions are recommended for timber exposed to marine borers.

The purchase order or specification for pressure-creosoted wood should set forth clearly:

1. The preservative and the specifications (AASHO, AWPA, or Federal) to which the preservative must conform.
2. The final net retention of creosote per cubic foot of wood.
3. The specification or standard with which the pressure-treating process must comply. (Again use AASHO, AWPA, or Federal.)

Information on the quality of wood acceptable for treatment also should be stated explicitly:

1. Lumber—grade, species and regional grading rules.
2. Round timber piling—length, species, and specification with which compliance is required.
3. Round timber poles (lighting)—species, ASA class and length. Quality and physical properties should be required to meet ASA standards.
4. Round timber posts.
   (a) Guardrail posts—Specify minimum diameter, species of wood acceptable, and any special framing requirements.
   Note: Adherence to established standards for size and length that are proving satisfactory in most states will promote economy.
   (b) Round timber fence posts—Specify minimum diameter, length, and acceptable species.
   Note: *Posts for distribution throughout the country are produced under specifications issued by the Farm Fencing Association in a range of sizes adapted to all types of fencing.*

INSPECTION—The purchaser, where practicable, should designate an experienced inspector to see that timber, preservative and treatment comply with specifications.

Lumber and sawed timbers should be graded at the point of origin. Grading shall be done and a certificate of inspection issued—(a) For southern pines by the Southern Pine Inspection Bureau and (b) For Douglas fir and West Coast species by the West Coast Lumber Inspection Bureau.

Inspection of lumber and sawed timbers should be made by one of the inspection bureaus named above at mill origin. Round timber products and all treating results shall be inspected at the treating plant by an approved inspector. Such inspections and acceptance should be final.

Inspection of round timber products and of all treating operations by highway personnel is recommended. Where experienced highway personnel are not available for this purpose, an approved inspection agency should be retained.

FOR FURTHER INFORMATION

Send for our new, FREE booklet, "Pressure-Creosoted Wood for Highways." This booklet contains a bibliography and tables showing recommended treatment for various kinds of wood. For your free copy of this informative booklet, just send the coupon below.

OTHER INFORMATION

Any of the following material can be had by writing to the respective source.

Information on the most effective use of pressure-creosoted wood is available from United States Steel (525 William Penn Place, Pittsburgh 30, Pa.):

A Report on Pole No. 92159
Electrical Resistance of Wood Poles
Pressure-Creosoted Poles Pay
Supplemental Field Treatment of Poles
Fences That Pay
Build and Save
Pole Buildings for Machinery Storage

The American Wood Preservers Institute (111 W. Washington Street, Chicago 2, Illinois) also offers a number of booklets plus engineering assistance to highway engineers on request:

Pressure-Treated Foundation Piles
Pressure-Treated Timber Poles
How to Design Pole-Type Buildings
Forest Products Laboratory Report No. 2043
How Pressure-Treated Lumber Stretches Park Budgets (reprint from Grist)
Wood Preserving News (Monthly)

Requests for the following literature should be addressed to the sources shown, with checks or money orders where prices are indicated:

Standard Specifications for Highway Bridges, published by the American Association of State Highway Officials, 917 National Press Building, Washington 4, D.C.

National Electrical Safety Code, for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. Price $1.75.

American Standard Specifications and Dimensions for Wood Poles, published by American Standards Association, 70 East Forty-fifth Street, New York 17, New York. Price 50c.

Standard Specifications for Round Timber Piles, ASTM Designation: D-25, latest edition, published by American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pa.

LUMBER GRADING RULES

Grading Rules for Southern Pine Lumber, issued by Southern Pine Inspection Bureau, National Bank of Commerce Building, New Orleans 4, La.

Standard Grading and Dressing Rules, issued by West Coast Lumber Inspection Bureau, 1410 S.W. Morrison Street, Portland 5, Oregon. Price 50c.

TREATING SPECIFICATIONS

Manual of Recommended Practice, American Wood Preservers Association, 839 Seventeenth Street, N.W., Washington 6, D.C. Complete manual: $8.00; 45 Individual Standards, (loose leaf sheets): 5c each.

Federal Specification—Wood Preservative Treating Practices—TT-W-00571d, General Service Administration, Washington, D.C.

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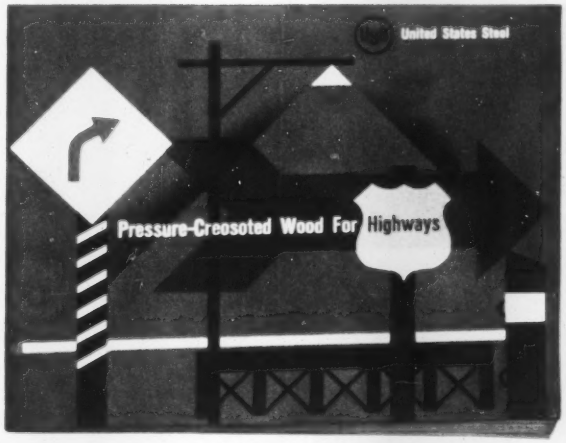
USS Creosote



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Please send me a copy of "Pressure-Creosoted Wood for Highways."

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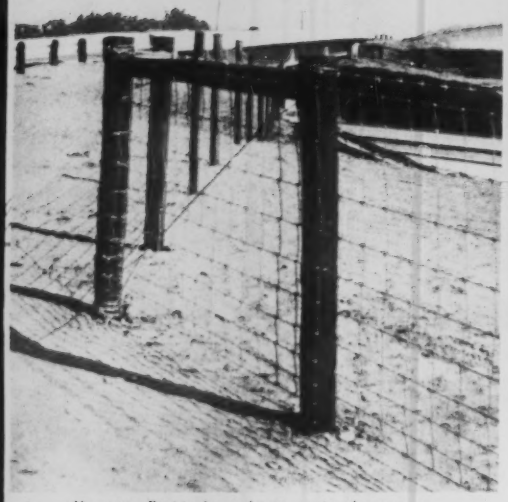


Kansas—Right-of-way fence posts of pressure-creosoted wood are strong, easily installed and low in cost.

Kansas—Pressure-creosoted poles provide durable, low-cost and low-maintenance supports for signs.

Pressure-creosoted poles for lighting standards are low in cost.

Poles and Posts—life expectancy 35 to 40 years

A recent survey of engineers in more than 50 major utility companies in 27 states indicates that the service life expected from today's pressure-creosoted poles is between 35 and 40 years—*without maintenance*.

Pressure-creosoted highway sign posts and fence posts have shown equally good service and excellent resistance to brush fires, whereas untreated posts decay at the ground line and are easily destroyed by fire.

Ohio—Modern, three-level viaduct extension with pressure-creosoted timber foundation designed for a load of 35 tons per pile.

Massachusetts—Pressure-treating with creosote-coal tar solution protects these bridge piles against marine organisms and the wetting and drying of salt water tides.

Foundation and bridge piling—solid, safe, and low in cost

Pressure-creosoted piles proyide permanent, economical foundations for bridges, viaducts and other structures. Service records kept over 70 years *prove* that buried foundation piles do not decay regardless of the cutoff height above the water table. Load tests prove they will support 25 to 35 tons—about the same as piles of other materials.

In salt water applications, pressure-creosoted piles have consistently demonstrated their resistance to attack by marine borers and other organisms such as teredo or limnora. Heavy retentions of creosote-coal tar solutions are superior for this application.

USS Creosote

Truck Line Gets Improvements

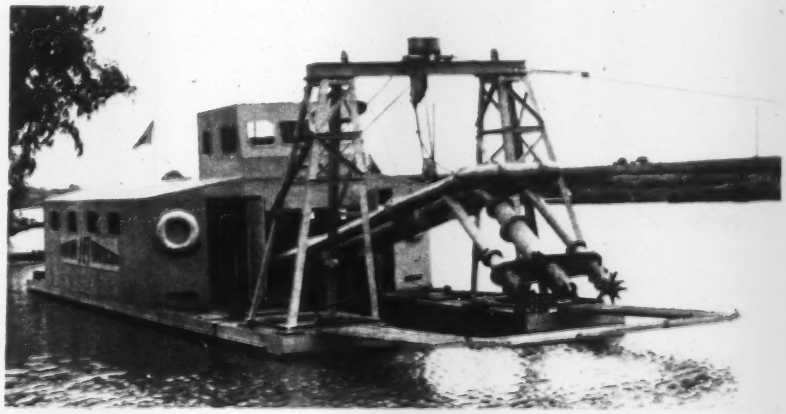
A Reo show truck at a recent exposition features a number of improvements that the company has developed for its 1959 line.

A new overhead valve six-cylinder engine is rated at 185 hp. Coolant flow in the engine has been increased 50% for longer valve and spark plug life. A plate-type oil cooler is incorporated to maintain oil temperature close to coolant temperatures.

A power take-off for mixer use has been built into the flywheel housing. This eliminates body and bumper modifications that would be necessary if the drive were off the front of the engine. The new unit adds only 63 lb to a standard vehicle weight.

Tires like those used on airplanes are designed for high flotation to get trucks through sand and other soft terrain. The show truck carried 15.20x20 front tires and 17.00x20 rear tires.

The Reo truck also features setback front axles. These place more weight on the front and give the operator more legal weight for a full rig. Reo Div., White Motor Co., Lansing, Mich.



Dredge Uses Venturi to Pull Slurry

A venturi section at the top of the draw pipe enables a new British dredge to move solids without passing them through pump impellers or other moving parts.

In operation, water is jetted through the venturi. The resulting low pressure at the throat creates "suction" in the draw pipe whose top is connected to the venturi throat. This draws slurry up the pipe. It mixes with the jetted water in the venturi and flows through the

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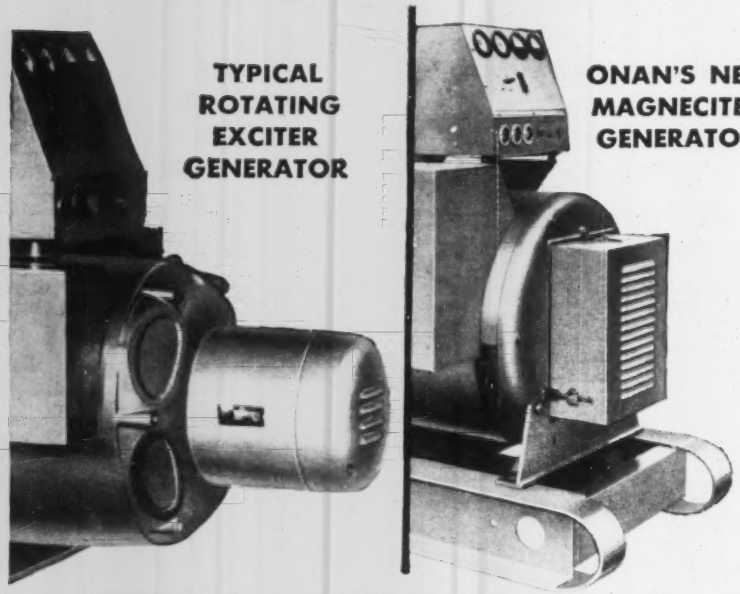

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delivery pipe and is discharged.

The material to be dredged is loosened by high-pressure water jets from nozzles located alongside the draw pipe. Pumps supplying water to the venturi also supply the nozzles.

The dredge is available with either 8-, 10-, or 12-in.-dia delivery tubes to dredge in depths up to 100 ft. In areas of solid clay, capacity is 40 cu yds of solids per hour. With a 12-in. line, gravel can be recovered at the rate of 65 cu yd per hour, delivering 600 ft at 6-ft elevation.

The venturi jet is the only part requiring replacement due to wear by abrasion from the moving solids. It requires replacement after a minimum of 30,000 cu yd at negligible cost.

The dredge is designed for dismantling for easy transport. A crew of two is needed for operation.

ACROW, LTD., SOUTH WHARF, LONDON, ENGLAND.

Walking Beam Roller Adjusts Hydraulically

A hydraulic lifting cylinder is now standard on the KX-25E, 3-axle "Walking Beam" tandem roller. The operator no longer has to depend on the terrain to position and lock the walking beam; he can raise and lower it at will.

With the center roll raised, the roller can be used as a 13-20 ton 2-axle tandem, the only one on the market, according to the manufacturers. Hydraulic lifting cylinder kits are available for converting machines already in the field. BUFFALO-SPRINGFIELD ROLLER CO., SPRINGFIELD, OHIO.

Pneumatic Handling Unloads Bulk Cement

A simple, fast and dependable method for pneumatically handling bulk cement is announced by Engineered Equipment. It is said to unload a 125 barrel truck in 30 to 35 min., depending on the height the cement has to be raised.

Complete accessories for the system mount on a truck body. ENGINEERED EQUIPMENT, INC., WATERLOO, IOWA.

Vibratory Compactor Is Towed or Pushed

The Model J-4 Vibro-Tamper attachment is said to be quickly mounted on any standard front-end loader or wheel tractor with front-end loader attachment. It also can be towed while compacting.

The self-powered unit has four shoes; each is said to deliver a 10,000 lb blow. INTERNATIONAL VIBRATION CO., 16702 WATERLOO ROAD, CLEVELAND 10, O.

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LONG used as protective coatings for pavements, *McConnaughay* Slurry Seals are practical for filling cracks and small irregularities... leaving non-skid, wear-resistant surfaces...arresting deterioration. Costs are low for this temporary treatment and complete resurfacing may be delayed several years.

Other applications include sealing of airports, highway shoulders, parking lots, driveways, and playing areas.

For Specification No. 18—Emulsified Asphalt Slurry Seal, write, wire or telephone your nearest *McConnaughay* Licensee or...

McConnaughay Slurry Seal laid to ⅜" depth on industrial pavement in 1943 ...and still giving satisfactory service.

McCONNAUGHAY LICENSEES Operating K. E. McConnaughay Emulsified Asphalt Plants

FLORIDA
E. A. Mariani—Emulsified Asphalt
Hooker's Point, Tampa

ILLINOIS
Emulsions, Inc.—*Lawrenceville*

INDIANA
Bituminous Materials Co.
P. O. Box 1140, *Terre Haute*
Wabash Valley Asphalt Co.
Terre Haute
Walsh & Kelly
R. R. No. 2, *Gary*
Brookman Construction Co.
17th & Gharkey Sts., *Muncie*
Fauber Construction Co.
Lafayette
Asphalt Materials & Construction, Inc.
960 East 22nd, *Indianapolis 2*
Bituminous Materials Co.
E. Swihart St., *Columbia City*

IOWA
Bituminous Materials & Supply Co.
409 Fifth Street, *West Des Moines*
Plants: *Spirit Lake, LeMars, Carroll, Algona, Lehigh, Davenport*

KENTUCKY
Emulsified Asphalt Co.—*Kuttawa*

LOUISIANA
Bituminous Materials Co.—*Metairie*
Serving Alabama, Mississippi, and Louisiana

MAINE
Doherty and Swearingen Co.
53 Main St., *Yarmouth*

MASSACHUSETTS
James Huggins & Sons, Inc.
Medford & Commercial, *Malden 48*

MICHIGAN
Bituminous Materials Co.
318 Atlantic St., *Bay City*
Bituminous Materials Co. - *Escanaba*
Bituminous Materials Co.
416 S. Water St., *Jackson*

NEW YORK
Knight Paving Products, Inc.
1655 Union Rd., *Gardenville*
Knight Paving Products, Inc.
Vine Street, *Ithaca*
Knight Paving Products, Inc.
1980 East Avenue, *Rochester 10*
Knight-Bitumen Corp.—*Watertown*
Albany Asphalt & Aggregates
75 State St., *Albany*
Bimasco, Inc. *(2 plants)*
312 Brook Street
Bayshore, L. I., N. Y.

SOUTH CAROLINA
Seaco, Incorporated
2700 Industrial Drive, *Columbia*

TENNESSEE
Asphalt Products Co., Inc.
Powell Ave., *Nashville 4*

CANADA
T. J. Pounder & Co., Ltd.
1474 Wall St., *Winnipeg, Man.*

Eastern Representative:
John A. Dow
157 Church St., *New Haven 10, Conn.*

K. E. McCONNAUGHAY LAFAYETTE INDIANA
EMULSIFIED ASPHALT *PLANTS AND PROCESSES*

HAULING TUNNEL ROCK

PROJECT LOCATION:

Glen Canyon, where the Colorado River flows between Utah and Arizona, near Lee's Ferry, Ariz.

CONTRACTOR:

Frazier-Davis Construction Co., St. Louis, Missouri — sub-contracting from Merrit, Chapman, and Scott Corp. — for U. S. Bureau of Reclamation.

PURPOSE:

To build diversion tunnels that will carry water of Colorado River while constructing the 325-million-dollar Glen Canyon Dam — a key unit of the Colorado River Storage Project. Dam itself will create a 28,000,000 acre-ft reservoir, stretching 186 miles upstream on the Colorado River and 71 miles up the San Juan River. Water from this reservoir will be used to irrigate farmland . . . to add to recreation facilities in the area . . . and to power eight 112,500-kilowatt-capacity generators.

JOB DESCRIPTION:

Excavate 2,900′ (40′ x 48′ dia.) diversion tunnel and 10,000′ (20′ x 23′ dia.) access tunnel, both on Arizona side of Colorado River.

EQUIPMENT:

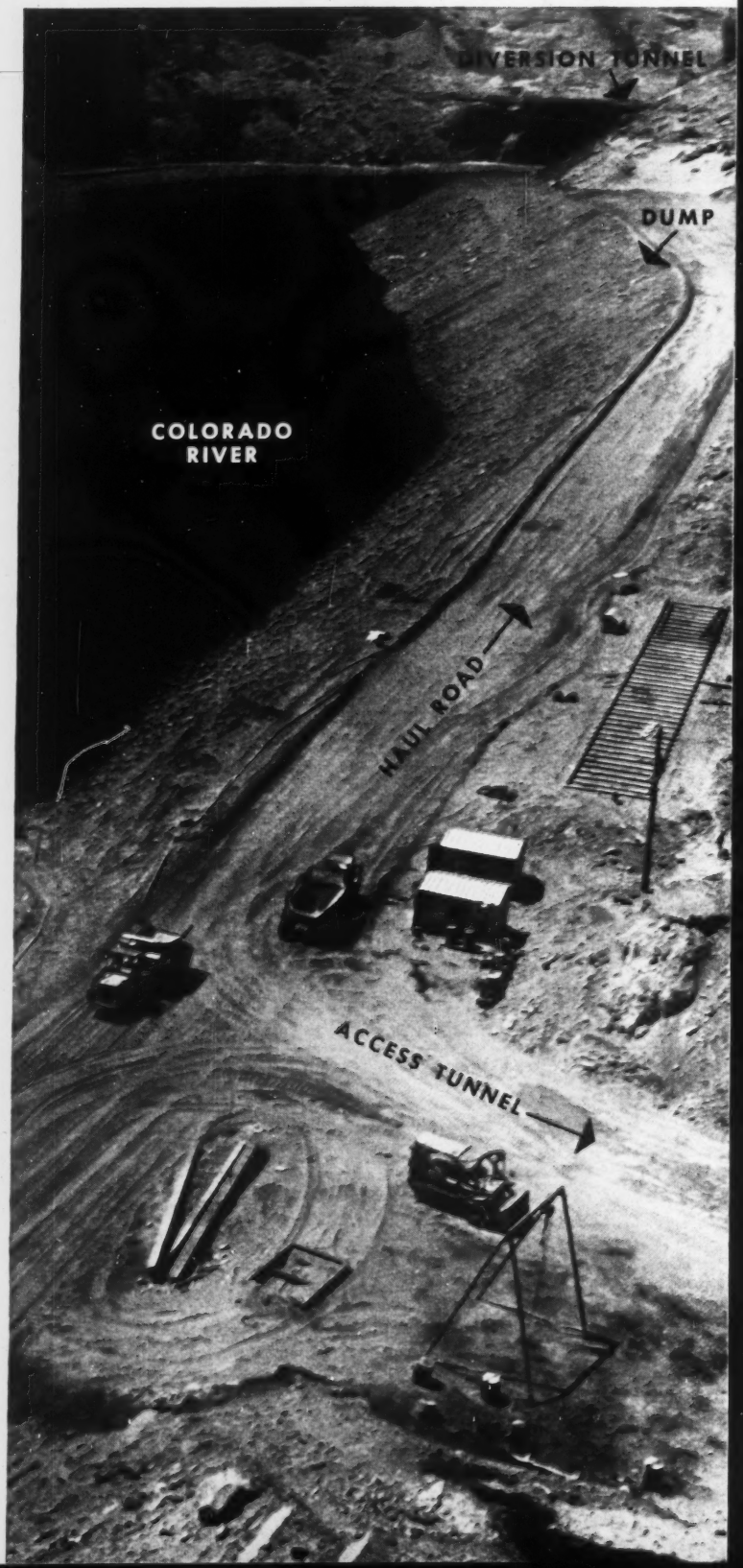
7 LeTourneau-Westinghouse 138-hp D Tournapull® prime-movers with 11-ton Rear-Dumps handle all hauling. They are loaded by Eimco tractor-shovels.

PERFORMANCE:

L-W units average 8 pay-yards per load, complete 1-mile cycle in 12 min, average 40 loads per 8-hr shift. Working 3 shifts, 6 days per week, the 7 Rear-Dumps haul about 40,000 pay-yards a week.

REMARKS:

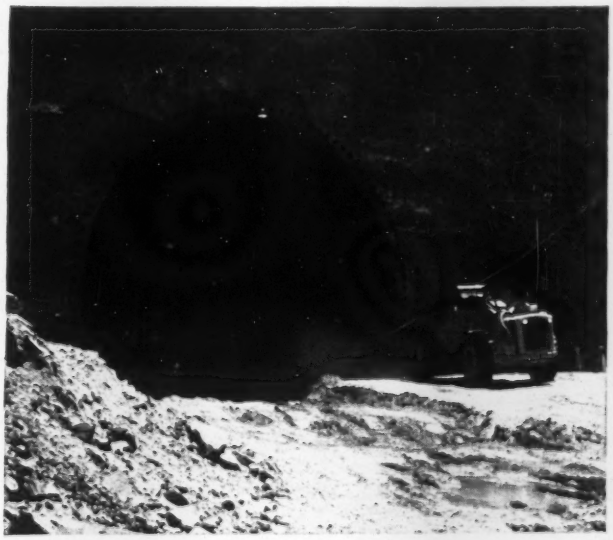
Says Claud Evans, Shift Superintendent, "We've had less trouble with our 'Pulls' than with any machine I have supervised in 30 years of tunnel work. Our 'D's' are fast, economical, and very maneuverable. We've had no downtime due to waiting for repairs . . . am well satisfied."



Birds-eye view of portal-to-dump haul road. Prior to tunneling work, the 7 Rear-Dumps were used for grading and leveling work areas and for haul-road construction. All men, equipment, and material is lowered 700′ by cable to the canyon floor.

at GLEN CANYON

Between the huge walls of the Glen Canyon, 11-ton Rear-Dump begins haul to dump area. "Exhaust scrubbers" (shown on front of machine) made exhaust gas harmless in the underground tunnel. Steel work in background is for new highway bridge that was under construction. Now completed, it's the nation's highest steel-arch bridge, 700' above the Colorado River.



29.5-mph D Tournapull Rear-Dump "highballs" out of diversion tunnel with load of shot limestone. In narrow tunnel, 'Pulls short turn-radius and electric power-steer proved a major advantage when positioning at loader and for maneuvering. With body in travel-position, D Rear-Dump makes continuous 180° turn in 24'8" — in dump-position in only 18'8".

About ¼ mile upstream from dam site, D 'Pull dumps heaped load of shot rock. At touch of a dashboard switch, point-of-action electric motor instantly raises bowl to any desired angle. At full dump, edge of bowl is behind and below rear wheels, so material cannot roll forward to lodge against wheels, or pile under rear end. Streamlined body sheds material readily.

*Trademark DR-2015-DCJ-2

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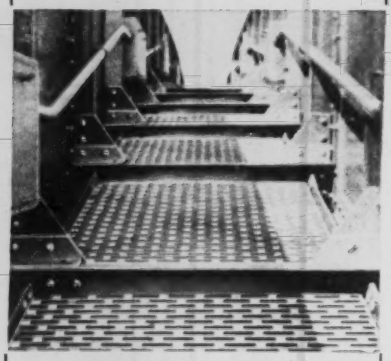
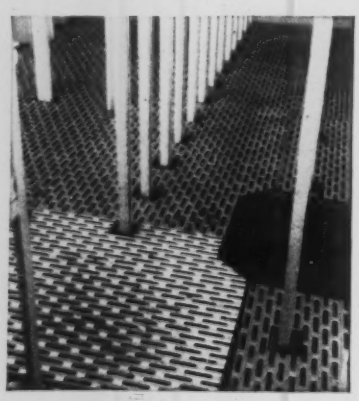


WALKWAYS & RAMPS

Exclusive I-Beam Design rivals structural strength of steel at fraction of weight. Can be fabricated to support any weight load; to any length, width or shape. Cutouts are reinforced.



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Patented upset design provides non-skid all direction safety under wet, greasy, other hazardous conditions. Maintenance-free, non-magnetic, non-sparking. Won't chip, splinter or crack.

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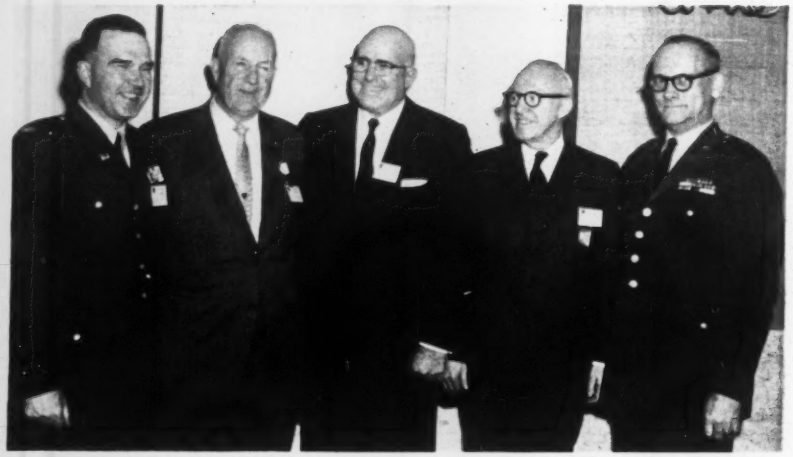

HEDGER HONORED—At last month's convention of the American Society of Civil Engineers in Los Angeles the Department of the Army surprised Harold E. Hedger (second from left) retired chief engineer of the Los Angeles Flood Control District with the award of a Distinguished Civilian Service Medal for his work as an Engineer Reserve officer. Others in the picture (left to right) are Col. C. T. Newton, U. S. Army District Engineer, Los Angeles; Gov. George D. Clyde of Utah, an ASCE member; Francis S. Friel, president, ASCE; and Brig. Gen. John L. Person, Assistant Chief of Engineers for Civil Works.

New Flood-Control Chiefs in LA

The retirement of Harold E. Hedger, chief engineer of the Los Angeles Flood Control District for the past 20 years, and of Paul Baumann, assistant chief engineer in charge of the Dams and Conservation Branch, has resulted in a number of promotions in the top posts of the organization.

Markham E. Salsbury, assistant chief engineer in charge of the Flood Protection Branch, has been appointed chief engineer. William J. Manetta has been appointed to Mr. Salsbury's former position, and Finley B. Laverty, former chief hydraulic engineer, has been promoted to Mr. Baumann's assistant chief engineer post.

Mr. Hedger's affiliation with the Flood Control District began while he was still attending the University of California, from which he graduated in civil engineering in 1924. Except for a leave of absence for military duty he was with the District continuously until his recent retirement.

A colonel in the Engineer Reserve, Mr. Hedger ended his military service as head of the Troop Facilities Branch, Military Construction Division, Office of the Chief of Engineers.

Mr. Salsbury, the new chief engineer, is also a long-time employee of the flood control agency, having joined it in 1927, two years after his graduation from the California Institute of Technology.

As chief engineer he will direct the agency's operations under an annual budget of $45 million. In addition, one of his major present responsibilities is the administration of a $225-million storm drain bond issue program under which 184 different projects are being carried out. The district has just completed a similar program involving an expenditure of $179 million.

Careers

Public Works

Walter D. Moulton, former director of District 4 of the Ohio State Department of Highways, has been named city engineer of Cuyahoga Falls. He succeeds **George Johnston,** who will become highway and sanitary engineer for the regional planning commission.

G. Whitney Shartzer, has been appointed service director at Dayton, Ohio. He joined the department in 1951 as an engineer.

George Fisher, city engineer at Pasco, Wash., has been named city supervisor at Pasco. In this newly created post he will be in charge of city street and engineering operations.

John R. Alspach, former Toledo service director, has been appointed Lucas County engineer.

John J. Stemley has been named chief engineer of the bureau of expressways of Dayton, Ohio.

TRACKS?

TIRES?

Heavy-duty Tournatractor — 210 hp — speeds to 17.2 mph forward, 7.2 mph reverse — power-shift constant-mesh transmission with torque converter — multiple-disc air brakes with 3,762 sq in. of braking surface — skid steer — tires: standard 21.00-25 16-ply, optional wide base 26.5-25 14-ply; choice of traction or rock service treads.

Work tool attachments — bulldozer — Angledozer® — root rake — push-block — tree stinger — power-control-unit.

which type of tractor is best?

The *job* is the key to your answer. You have to deal with 2 types of tractor work on every earthmoving contract: (1) concentrated pushing, dozing, and hauling in restricted areas, and (2) scattered hit-and-run work over the entire work site (or *several* work sites).

Q. Which does a better job on these basically different types of work: crawlers or rubber-tired tractors?

A. For necessary "stay put" jobs in limited areas, crawlers may prove best . . . because of their greater lugging power at slow speeds. This means heavy short-haul work, push-loading big scrapers, dozing in mud or rock-filled earth. BUT tractors-on-rubber are better for those "hit-and-run" jobs, where speed and mobility mean extra profit. Such jobs include push-loading, leveling scattered fill, towing "part-time" scrapers, stockpiling, clean-up, maintenance of haul and access roads, finish-grading, emergency push-pull anytime, anywhere, on your project.

Q. What's the best ratio of crawlers-to-rubber for best job efficiency?

A. Analyze the tractor work in your contract schedule. Compare "fixed position" and "mobile" work requirements. You may have only enough "hit-and-run" work for one rubber-tired tractor — or you may need more for extra profit. Chances are that on most jobs, of *any* size, you can profit more with at least *one* heavy-duty tractor-on-rubber.

Q. What does Tournatractor® offer that other rubber-tired tractors don't have?

A. The big difference is *proof of performance*. When you buy a Tournatractor, you're getting a tractor without "bugs". This 210-hp, 17-mph tractor has been used by contractors all over the world on every possible tractor job. Knowledge gained over the years has resulted in continuous improvement in mechanical efficiency and performance. It's the *only* thoroughly job-proven, rubber-tired tractor available for heavy earthmoving work.

Here are a few quick facts about the Model C Tournatractor . . . *Drawbar pull:* as good as comparable priced crawlers at speeds over 2 mph. *Mobility:* to go anywhere at speeds to 17 mph. *Roadability:* travels anywhere without damage to concrete, blacktop, planking, or rail ties. *Quick speed shift:* saves time making speed changes on the run. *Easy operation:* with electric control of dozer blade and other attachments. *Low maintenance:* because of far fewer parts, simple construction.

Ask for a copy of the L-W bulletin 56-061-T for full details.

CT-1977-DC-1

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Where quality is a habit

TIME SAVED TWICE! with SYLGAB

Continuous
BAR BOLSTER SUPPORTS

1. The right material at the right time. No delays due to late delivery or mixed-up shipment.
2. Designed for speedy, easy installations. Allows fast pouring due to high rigidity.

A RUGGED SUPPORT FOR SLAB REINFORCEMENT

Made in 5' lengths of hard steel wire supporting bar with wire legs spaced either standard 5" distance or directly under each slab rod (4" min.)

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STEEL & WIRE CORP.
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BEAM CLIPS • SPECIAL COLUMN CLIPS
EXPANSIBLE CLIPS
STRAIGHT AND COIL WIRE
HAIRPIN CLIPS • TOGGLE HANGERS
FORM SPACERS • BAR ACCESSORIES

Request Catalog—Phone or Wire Collect

Lincoln, Neb. Air Force Base gets . . .

Radar Approach Control Facility

Unit prices quoted by the two low bidders for this radar approach control facility contract at the Lincoln Air Force Base, Lincoln, Neb., were very close on practically all items.

However, a low lump sum bid of $174,765 for the radar control building, $17,835 below the amount bid by the second low for the contract, gave Geo. Cook Construction Co., Lincoln, the advantage needed to take the $298,051 contract. The award by the Corps of Engineers, Omaha, was 10.3% below the engineer's estimate.

Contract includes a radar approach control building, emergency power building, turntable base foundation, electrical distribution and communications system, access roads, hardstands and parking areas and landscaping.

The government furnishes a 25 kw diesel engine generator set, antenna tower and three bronze markers.

Prevailing wages on the building include: carpenter $2.975; cement masons $2.95; electricians $3.40; crane and shovel operators $3.25; common laborers $2.05. Prevailing wages on site preparation and incidental paving include: carpenter $1.95; cement finishers $1.85; bulldozer operators $1.60-$1.85; common laborer $1.30.

The bidding included:

1C Geo. Cook Constr. Co., Lincoln, Neb	$298,051
2 Kingery Constr. Co., Lincoln	315,548
5 Fred R. Comb Co., Minneapolis, Minn	331,040
EE Corps of Engineers, Omaha	332,503

Bids: 2-18-59 Items	Unit	Quantity	Unit Prices 1C	 2
Building, radar approach control *	ls	job	$174,765	$192,600
Emergency power bldg **	ls	job	9,723	7,587
Turntable base fndn ***	ls	job	2,353	4,300
Elec distribution & communication system ****	ls	job	44,945	43,710
Instal Gov-furn antenna twr	ls	job	2,079	2,233
Excavation	cy	225	0.93	0.93
Borrow	cy	5,525	1.32	1.32
Conc piling: cast-in-place	lf	5,500	6.00	6.11
straight curb	lf	180	3.07	3.07
curb & gutter	lf	620	4.04	4.04
walk	sf	1,080	0.65	0.65
Base course, 4"	sy	120	1.44	1.44
6"	sy	1,225	2.17	2.17
8"	sy	850	2.88	2.88
Bituminous prime coat	gal	305	0.20	0.20
Surface course	sy	610	1.41	1.41
Bituminous material	gal	720	0.16	0.16
Culverts, 15"◇	lf	40	5.88	5.88
Storm drains, 12"◇	lf	123	3.42	3.42
Tap to existing manhole	ea	1	39.65	39.65
Inlets, area type	ea	1	185.00	185.00
adj to grade	ea	1	305.00	325.00
curb type	ea	2	290.00	290.00
Manhole, adjust to grade	ea	1	325.00	325.00
Water pipe line, 2"◇	lf	62	3.57	3.57
Gate valve & valve box	ea	1	290.00	290.00
San sewer pipe, 6"◇	lf	55	3.17	3.17
drop manhole	ea	1	640.00	640.00
Ch link security fence	lf	20	7.00	5.20
remov existing	ls	job	108.00	108.00
relocate	lf	200	1.08	1.08
Ch link sec fence gate, 9 x14	ea	1	255.00	280.00
9 x20	ea	2	331.00	356.00
Guard posts	ea	2	13.25	13.25
Steam distri syst, compl, incl expansion loop & MH	ls	job	6,286	6,800

Bids: 2-18-59 Items:	Unit	Quantity	Unit Prices 1C	 2
Topsoil	ls	job	733.00	733.00
Sodding	sy	2,300	0.48	0.48
Seeding	ls	job	297.00	297.00
Watering	Mgal	32	4.62	4.62

Commence: 2-25-59 Complete: 240 cal days
Liquidated damages: $100 day

* Excl of piling but incl utilities, stubbed-out struct exc & bkfl, interior elec work & equip, fuel tank & appurtenances, and air conditioning syst incl evaporative condenser.

** Complete incl interior elec work & equip, instal of Government-furnished generator; fuel tank, guys & anchors.

*** Complete incl struct exc & bkfl, instal of Government-furnished brass markers, & all appurtenances.

**** Complete incl transformers, transformer pads, areas & vaults, elec manholes, conduits & removal & relocation of existing power lines.

New Mexico Airport Parking Apron Extended

Concrete pavement at $19.50 a cu yd plus portland cement priced separately at $5.40 a bbl, account for a whopping 67.7% of this $351,183 contract for additions to parking apron at the Kirtland Air Force Base, Albuquerque, N. M.

The award to C. R. Davis Contracting Co., Albuquerque, by the Corps of Engineers, Albuquerque, was on a low bid 4% below the engineer's estimate and 11.2% below the high of four bids.

The work also includes bituminous prime coat, asphalt concrete surface course, curbs and gutters, water and gas lines, sanitary sewers, storm drain, electrical and communication systems and related work.

Cement content of concrete is low-alkali.

Wages include: carpenter $2.75; concrete finisher $2.95; tractor operator $2.65; shovel and crane operator $3.00; common laborer $1.75.

1C C. R. Davis Contr. Co., Albuquerque	$351,183
2 Allison & Haney, Inc., Albuquerque	357,619
4 Wylie Bros. Contr. Co., Albuquerque	395,411
EE Corps of Engineers, Albuquerque	365,465

Bids: 1-27-59 Items	Unit	Quantity	Unit Prices 1C	 2
Excavation	cy	15,600	$0.75	$0.87
Subgr prep for flexible & rigid pavements & curbs	sy	46,000	0.30	0.20
Stabilized agg base course	cy	1,200	4.75	4.00
Subbase course	cy	1,500	3.75	3.20
Bituminous prime coat	gal	6,000	0.22	0.20
mtl for hot-mix asph conc surf course	gal	25,000	0.17	0.17
Asph conc surf crse, hot mix	t	1,900	9.00	6.00
Concrete pavement	cy	8,600	19.50	19.40
Port cmt for conc pavement	bbl	13,000	5.40	5.50
Bituminous dust palliative	gal	2,000	0.30	0.25
Tie down anchors	ea	175	7.50	8.00
Clear site, compl operations	ls	job	14,550	20,000
Airfield marking	sf	4,800	0.10	0.08
Curb & gutter	lf	1,850	1.60	1.80
Header curb	lf	65	1.00	1.20
Water lines, complete	ls	job	1,500	2,500
Gas lines, complete	ls	job	1,300	2,000
Sanitary sewers, complete	ls	job	6,000	10,000
Storm drain, complete	ls	job	1,500	665.00
Elec & comm syst, complete	ls	job	23,000	28,000
Conc pave in test holes, repl	ea	1	300.00	600.00
Subgrade in test holes, repl	ea	2	120.00	300.00

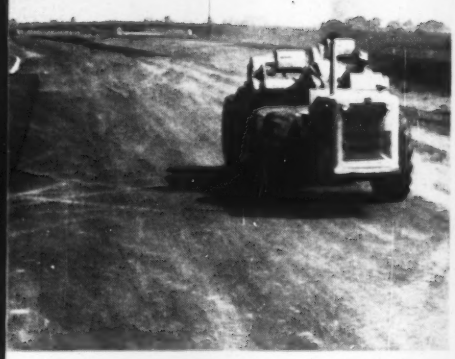
Commence: 1-29-59. Completion schedule 150 cal days.
Liquidated damages: $100 cal day

One of Wright Contracting Company's two Model D Tournapulls spreads topsoil in median strip . . . on new Interstate Route, bypassing Hagerstown, Md. Says Operator Palmer B. Mitchell, "There's none better for finish work . . . it loads fast and it moves fast. You can travel over pavement if need be. And it's easy to operate."

L W
INTERSTATE HIGHWAY PROGRESS REPORT

"Best for clean-up work"

Says Project Manager for Wright Contracting Co.



D 'Pull "highballs" over pavement as it returns to topsoil stockpile. Only 8' wide, and within legal weight limit, "D's" can walk across completed pavement or can be driven job-to-job over highways, without special permit.

Building today's Interstate Highways, with their intricate interchanges, calls for a lot more area of finish work than was needed for the single lane roadways of a few years ago. Wright Contracting Co. of Columbus, Georgia, is one of the firms which has found the speedy, economical "Handyman" D Tournapull® a cost and time saver for this part of the job.

The Wright Co. recently completed 4½-million-dollar Bypass Route 11 contract, near Hagerstown, Md.—which will eventually be a part of the I-H system in this area. The firm used 2 LeTourneau-Westinghouse 9-yd D Tournapulls to handle finish work, which included spreading topsoil along the 5.6 miles of divided highway, and for the 8 miles of ramps and side roads. Here's how machines performed:

Load 7.5 yd in 35 sec

Push loaded, L-W 'Pulls* picked up 7.5 yd of topsoil in 35 sec. Hauling out of stockpile, machines climbed 4 to 5% grade. The 29.5-mph "D's" then hauled material an average of 1750'. Here, using exclusive L-W finger-tip electric controls, operator spread topsoil to grade along median strip and shoulders.

Travel over pavement

"D's" returned to borrow pit at top speed over completed road, without damage to paving. This is permitted because, in spite of its high-production capacity, D Tournapull's axle-load weight is less than 9 tons.

"Load and dump easy"

Pleased with D Tournapulls' production of 1250 to 1500 yd per 10-hr shift, Project Manager R. T. Silva says, "I'm sold on these units . . . *they're the best for clean-up work.* They're fast, and they load and dump easy. We're *very* satisfied with them."

See it in action

Let us show you how this L-W 138-hp D Tournapull scraper performs on one of your jobs. Write, call, or drop in so we can arrange for a demonstration.

*Trademark DP-2024-DCJ-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

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Where quality is a habit

REPUBLIC HIGH STRENGTH REINFORCING BARS

Reduce column size, save floor space, permit design stress of 30,000 PSI

REPUBLIC HIGH STRENGTH REINFORCING BARS MEET ASTM SPECIFICATION A-431-58T

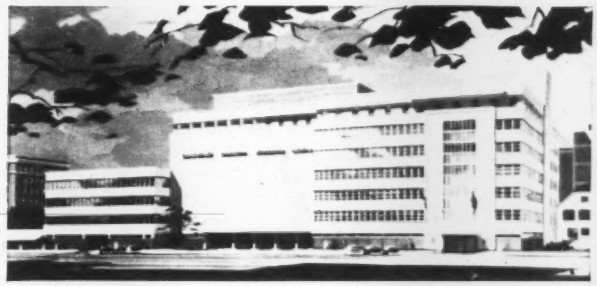
. . . "High Strength Billet Steel Bars for Concrete Reinforcement". Material used in bar fabrication is of a special high strength grade intended for use in concrete structures designed to require steel reinforcement with a yield point of 75,000 pounds per square inch.

These advantages were obtained by employing large size, Nos. 14S and 18S Republic High Strength Concrete Reinforcing Bars for column verticals in the Washington National Insurance Company Building, Evanston, Illinois.

The building has unusually large bays, approximately 27′ by 27′ with flat slab reinforced floors 9″ and 10″ thick. While the building is only seven stories, and the floor live load 100# per square foot, heavy loads must be supported by the columns because of the large bays.

Decision by the Architects-Engineers, Graham, Anderson, Probst & White, to use high strength reinforcing bars was based on utility rather than on initial economy.

For example, a first story column with conventional steel verticals consisting of two concentric spirals contain-



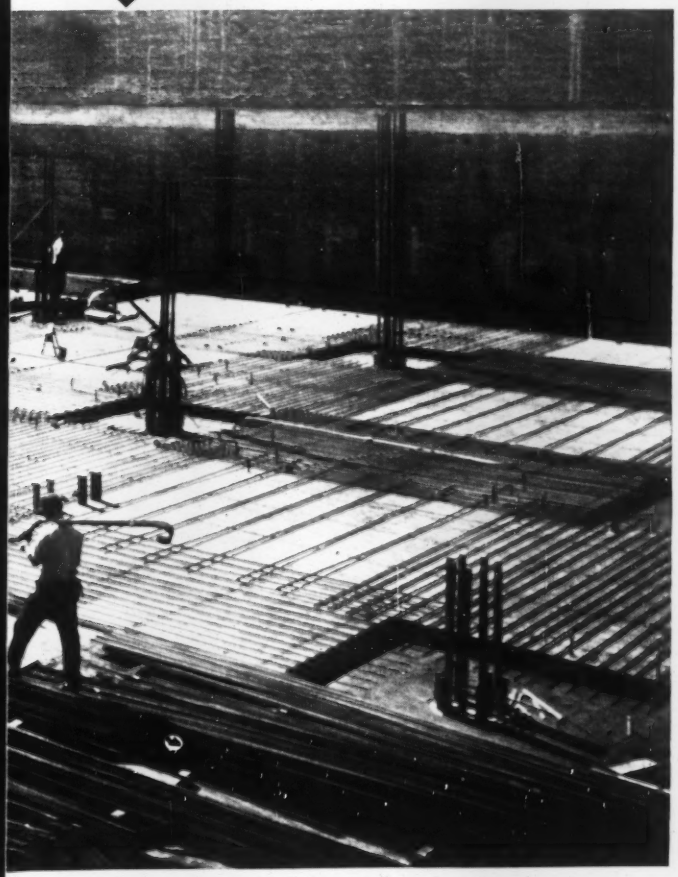
Washington National Insurance Company Building, Evanston, Illinois. Graham, Anderson, Probst & White, Architects-Engineers, Chicago. Norman F. Brunkow, Chief Structural Engineer. A. L. Jackson Company, General Contractor, Chicago. Gateway Erectors, Inc., Steel Erectors, Chicago.

ing 22 No. 11 bars, limited to a design stress of 20,000 PSI, would have been 32″ in diameter. The same column using 11 No. 18S butt-welded, high strength bars, with a possible design stress of 30,000 PSI, measures 26″ in diameter—a saving in floor space of approximately 2 sq. ft. per column.

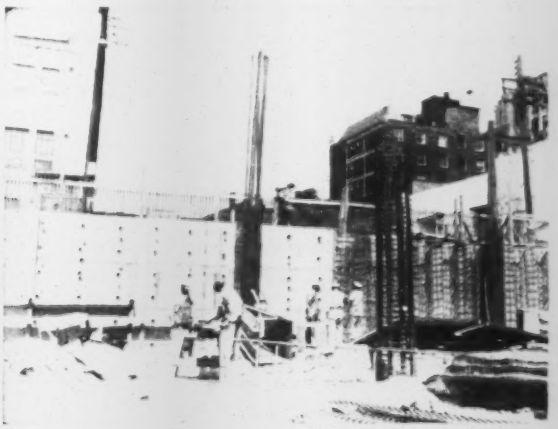
Republic High Strength Reinforcing Bars provide a minimum yield point of 75,000 pounds per square inch and meet the new ASTM Specification A-431-58T.

The high strength bars are rolled from new billet steel only, in all standard sizes including, 14S (1½″ square equivalent) and 18S (2″ square equivalent). Bars can be specified to any length up to 60 feet. All splices are field welded. Mail the coupon today for full facts.

Progress photo below shows the setting of reinforcing steel in the second floor and indicates the staggered heights of column verticals.



NO. 18S HIGH STRENGTH REINFORCING BARS used in column verticals are electrically butt-welded in basement story adjacent to steel sheeting. To accomplish the weld, the lower bar is furnished with a square cut end and the top bar is beveled at 45 degrees from each side to form a chisel end. Clamps are used to hold bars in alignment.



This photo shows first and second story column verticals extending above the basement floor after having been butt-welded to the dowels in caisson tops. Bars are No. 18S high strength types furnished by Republic Steel.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL

REPUBLIC STEEL CORPORATION
DEPT. EN-7394
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Please send more information on Republic High Strength Concrete Reinforcing Bars.

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

Labor and Materials Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES

- Cement, Aggregate Ready mixed Concrete, Asphalt: Last, Mar. 5; Next, Apr. 9.
- Iron and Steel Products, pipe: Last, Mar. 12; Next, Apr. 16.
- Wood Products, Glass, Explosives, Chemicals: Last, Mar. 19; Next, Apr. 23.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Mar. 26; Next, Apr. 30.

HOURLY WAGE RATES—Base rate + fringe benefits

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor: Building	Common Labor: Heavy Const	Truck drivers: 1½ T	Truck drivers: under 4 cy	Truck drivers: over 4 cy
Atlanta	$3.75	$3.10	$3.30+7½	$3.225	$3.25	$3.50+10¢	$3.35+20¢	$1.75	$1.75	$1.75	$1.85	$2.10
Baltimore	4.10+10¢[a]	3.30+7½¢[c,d]	3.90+7½¢	3.80/3.95+10¢	3.60+7½¢	3.45+7½¢	3.90+7½¢	2.20+7½¢[e]	2.20+7½¢[e]	2.10+7½¢	2.10+7½¢	2.20+7½¢
Birmingham	3.85	2.95	3.35+10¢	2.77	3.17	3.425	3.47+10¢	1.75	1.85	1.83	2.02	2.35
Boston	3.80+20¢[f]	3.40+10¢[c]	3.90+20¢	3.77½+10¢	3.65+35¢	3.70+12¢	3.20+10¢	2.60+7¢[c]	2.50+7¢	2.45	2.45	2.65
Chicago	3.82½+7½¢[g]	3.65+20¢[h]	4.00+16¢[c]	3.55+5¢	3.70+25¢	3.90+12¢	3.75+22¢	2.77½+7½¢[c]	2.77½+7½¢[g]	2.46+15¢		
Cincinnati	3.85	3.57½	3.65+10¢	3.375/3.60	3.625	3.82+4¢	3.80+9½¢	2.62½	2.525	2.45+2½¢	2.55+2½¢	2.65+2½¢
Cleveland	3.865+10¢[c]	3.89[c]	3.79+10¢[c]	3.89[c]	3.89	3.95	3.70+15¢	3.15	3.065[c]	2.75+10¢	2.75+10¢	2.75+10¢
Dallas	3.875[a]	3.25	3.30+7½¢	3.375	3.625+13¢	3.375+7½¢	3.45+8¢	1.70	1.70	1.70/2.625	1.70/2.625	1.70/2.625
Denver	3.75	3.34	3.175+7½¢	3.15	3.575+12½¢	3.75+14¢	3.55+10¢	2.25	2.17	2.30	2.50	2.60
Detroit	3.77+29¢[i]	3.40+41¢	3.75+22½¢	3.47+25¢	3.66+34¢	3.90+35½¢	3.735+14¢	2.65+33¢	2.80+10¢	2.80	2.80	2.80
Kansas City	3.85[c]	3.325[c]	3.40[c]	3.345	3.625	3.60+25¢	3.60+9½¢	2.355	2.405[c]	2.33	2.33	2.405
Los Angeles	3.85+10¢[j]	3.375+20¢	3.85+20½¢	3.41+10¢	4.00+30¢	4.15+4¢	3.90+40¢	2.68+10¢	2.68+10¢	2.93+10¢	2.93+20¢[c]	3.12+10¢
Minneapolis	3.725[c]	3.30[c]	3.47[c]	3.30	3.40+23¢	3.38+35¢	3.42+20¢	2.55[c]	2.70	2.55	2.55[c]	2.70[c]
New Orleans	3.525+5¢[m]	3.00[n]	3.30+7½¢[n]	3.125+7½¢	3.12+5¢	3.475+7½¢	3.40+15¢	1.75[c]	1.75[c]	2.475+7½¢	2.475+7½¢	2.475+7½¢
New York	4.65+43¢[k]	4.20+34¢[o]	4.45+46¢[p]	4.45+36¢[q]	4.35+52¢	3.90+51¢	4.40+4¢	3.10+25¢[r]	3.10+25¢[r]	2.35+22½¢	3.15+23½¢	3.15+23½¢
Philadelphia	4.00+17¢[s]	3.635[c]	4.175+23¢[t]	2.595/4.23+10¢	4.05+15¢	4.07½+16¢	4.10+16½¢	2.65	2.35		2.57+15½¢	
Pittsburgh	4.20+20¢[u]	3.675+15¢[v]	4.00+20¢[w]	3.64+10¢	3.825+20¢	4.35+32½¢	4.00+20¢	2.45+20¢[c]	2.30+20¢[c]	2.37+20¢	2.51+20¢	2.61+20¢
St. Louis	4.05+32½¢	3.575+10¢[c]	3.60+7½¢[c]	3.675	3.80+7½¢	3.95½+2½¢[x]	3.92½+27½¢	2.625+10¢[c]	2.625+10¢[c]	2.725+7½¢	2.725+7½¢	2.75+7½¢
San Francisco	4.10+42½¢	3.30+32½¢	3.85+20¢	3.405+10¢	3.74+52½¢	3.91+34½¢	3.70+40¢	2.685+00¢[c]	2.685+10¢[c]	2.81+10¢	2.75+10	2.89+10¢
Seattle	3.90+10¢	3.32+10¢	3.40+10¢	3.29+20¢	3.57+30¢	3.65+20¢	3.81+24¢	2.85+10¢	2.85+10¢	2.87+17½¢	2.87+07½¢[c]	3.07+17½¢
Montreal	2.35+5¢	2.15+5¢	2.25+5¢	2.25+5¢	2.35+5¢	2.35+5¢	2.32+5¢	1.55+4¢	1.55+4¢	1.55+4¢	1.55+4¢	1.55+4¢
Toronto	2.95+12¢	2.65+11¢	2.75+11¢	2.75+11	2.80+19¢	3.05+12¢	2.95+12¢	1.70+7¢	1.70+7¢	1.80+7¢	1.80+7¢	1.80+7¢

	Tractor Operators—Incl. bulldozers: 34-49 hp	70-100 hp	100 & over	Tractor scraper 15-16 cy	Power cranes & shovels: ½ cy	¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$2.75	$2.90	$2.90	$2.75	$3.275	$3.425	$2.75	$2.675	$1.87
Baltimore	3.40/3.55+10¢	3.40/3.55+10¢	3.40/3.55+10¢	3.40/3.55+10¢	3.80/3.95+10¢	3.80/3.95+10¢	3.40/3.55+10¢	2.85/3.00+10¢	2.25+7½¢
Birmingham	2.79	2.79	2.79	2.93	2.93	2.93	2.89	2.52	1.90
Boston	3.40+10¢[c]	3.40+10¢[c]	3.40+10¢[c]	3.40+10¢	3.775+10¢[c]	3.775+10¢[c]	3.40+10¢	3.325+10¢	2.60+7¢[c]
Chicago	3.30+5¢	3.45+5¢	3.30+5¢	3.30+5¢	3.90+5¢[c]	3.90+5¢[c]	3.50+5¢	3.40+5¢	3.55+5¢
Cincinnati	3.375	3.375	3.375	3.375	3.375	3.60	3.60	3.60	3.60
Cleveland	3.64[c]	3.64[c]	3.64[c]	3.64	3.89[c]	3.89[c]	3.64	3.515[c]	3.515
Dallas	1.70/2.625	1.70/2.625	1.70/2.625	1.70/2.625	3.10[m]	3.10[m]	1.70/2.625	1.85	1.85
Denver	2.40	3.00	3.00	3.00	3.15	3.15	3.00	3.00	2.53
Detroit	3.50+10¢	3.50+10¢	3.50+10¢	3.50+10¢	3.50+10¢	3.50+10¢	3.50+10¢	3.195+10¢	2.75+25¢
Kansas City	2.65[c]	3.10	3.10	3.10	3.345[c]	3.345[c]	3.10	3.10	2.45
Los Angeles	3.71+10¢	3.71+10¢	3.71+10¢	3.81+10¢	3.81+10¢	3.81+10¢	3.81+10¢	2.93+10¢	2.89+10¢
Minneapolis	3.08	3.30		3.30	3.52	3.783	3.08	2.97	2.70[c]
New Orleans	3.125+7½¢[n]	3.125+7½¢[n]	3.125+7½¢[n]	3.125+7½¢	3.125+7½¢[n]	3.125+7½¢[n]	3.125+7½¢	2.475+7½¢	1.85[c]
New York	3.825+31¢[c]	3.825+31¢[c]	3.825+31¢[c]	3.95+32¢	4.70+38¢[c]	4.70+38¢[c]	3.95+32¢	3.95+32¢	3.55+18¢[c]
Philadelphia		2.595/4.23+10¢		2.595/4.23+10¢	2.595/4.23+10¢		2.595/4.23+10¢	2.595/4.23+10¢	2.35
Pittsburgh	3.44+10¢[c]	3.44+10¢[c]	3.44+10¢[c]	3.44+10¢	3.64+10¢[c]	3.64+10¢[c]	3.64+10¢	3.15+10¢	2.30+20¢[c]
St. Louis	3.675[c]	3.675[c]	3.675	3.675	3.675[c]	3.675[c]	3.675	3.125	3.125[c]
San Francisco	3.70+10¢	3.70+10¢	3.70+10¢	3.70+10¢	3.85+10¢	3.85+10¢	3.75+10¢	3.10+10¢	2.955+10¢
Seattle	3.26+20¢	3.26+20¢	3.26+20¢	3.26+20¢	3.63+20¢	3.63+20¢	3.35+20¢	2.99+20¢	3.05+10¢
Montreal	1.75+4¢	1.98+4¢	1.98+4¢	1.98+4¢	2.25+5¢	2.25+5¢	1.98+4¢	1.85+4¢	1.85+4¢
Toronto	2.15+9¢	2.25+9¢	2.25+9¢	2.25+9¢	2.75+11¢	2.75+11¢	2.25+9¢	2.30+9¢	2.30+9¢

ENR Skilled Average (Bricklayers, Carpenters, Iron Workers): $3.796. ENR Common Average $2.503

Description of fringe benefits last appeared Feb. 26; will next appear in Dec. Quarterly Cost Issue. * Now negotiating new contract.

DEFERRED WAGE INCREASES 1959: [a] Mar. 31: 15¢. [b] Apr. 1: 15¢. [c] Apr. 1: 10¢. [d] Oct. 1: 20¢. [e] Apr. 1: 13¢. [f] Apr. 1: 5¢. [g] May 1: 5¢. [h] Jun. 1: 10¢. [i] Jun. 1: 15¢. [j] May 1: 10¢. [k] Jul. 1: 7½¢. [l] Jul. 30: 10¢. [m] Aug. 1: 7½¢. [n] Apr. 1: 17½¢. [o] May 1: 15¢. [p] Nov. 1: 5¢. [q] Nov. 1: 10¢. [r] Jul. 1: 20¢. [s] Jul. 1: 15¢. [t] Jul. 1: 12½¢. [u] Jun. 1: 12½¢. [v] Dec. 1: 10¢. [w] May 1: 18¢. NOTE: Report is complete for 8 trades only: bricklayers, carpenters, ironworkers, common labor, truck drivers (4 cu yd), tractor operator (70-100 hp), power cranes (¾ cu yd), and air tool operators; complete listings for other trades will appear next month.

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	Gypsum Plaster Board: tapered edge, per Msf ft, ½"	Gypsum Plaster Board: tapered edge, per Msf ft, ⅝"	Gypsum Board Lath: plain or perf, per Msf ft, ⅜" x 16" x 48"	Gypsum Sheathing: tongue & groove, per Msf ft, ½" x 2' x 8'	Fiber Board Sheathing: asph impreg & coat, per Msf ft, ½" sq ed	Fiber Board Sheathing: asph impreg & coat, per Msf ft, ½" T&G	Fiber Board Insulation: sq edge, paint, per Msf ft, ½"	Mineral Wool Insulation: loose, per 40-lb bag	Mineral Wool Insulation: 3" batts per M sf	Glass Fiber Insulation: loose, per 40-lb bag	Glass Fiber Insulation: 3" batts per M sf	Aluminum Foil: 60¢ Kraft 1 side foil per roll of 250 s. f.	Aluminum Foil: Expansible Blanket 2 layers foil per Msq ft
								a		a			
Atlanta	$65.00/F	$55.00/F	$42.00/F	$65.00/F	$68.00/F	$127.00/F	$70.00/F	1.59/c	$70.00/F	$2.00	$80.00/F	.....	.....
Baltimore	51.70	45.55	34.25	55.35	65.00	108.50	69.00	1.30	66.50	1.50	45.00	$4.00	$33.50
Birmingham	68.00/H	57.00/H	47.77/H	75.00/H	65.00/H	136.50/H	81.00/H	1.10	70.00	1.60	75.00	3.13/g6	.....
Boston	60.00/m	50.00/m	36.00/m	60.00/m	65.00	120.00	79.00/k,o	1.45/c	75.00	...	75.00	5.30	53.50/g
Chicago	67.00	54.00	45.00	62.00	87.00	123.00	87.00	1.85	80.00	...	63.65/f	5.25/g	.....
Cincinnati	48.00/c,H	42.85/c,H	32.05/c,H	51.15/c,H	70.00/c,H	125.00/c,H	72.50/c,H	1.30/c,H	65.00/c,H	1.30/c,H	76.50/c,H	3.28/c,J	50.00/c,J
Cleveland	62.00/F	56.50/F	41.50/F	65.00/F	75.00/F	125.00/F	80.00/F	1.35/1.50/H	72.00/H		55.00/c	17.50/c,J	55.00/J
Dallas	55.00	52.50	42.50	60.00	68.75	118.00	68.75	2.00	62.25	1.45	66.15	4.50/g,A	.....
Denver	62.00/H	51.50/H	31.00/H	62.00/H	75.00/H	126.00/H	74.90	1.50/c	65.00/g,b	1.75/c	65.00/c	5.25/c	48.65
Detroit	66.00/K	56.00/K	42.45/K	66.00/K	60.50/J,K	100.50/J,K	60.50/J,K	1.00/c	55.00	1.95/c	88.00	.....	.....
Kansas City	65.00/H	55.00/H	40.00/H		72.00/H	115.00/H	75.00/H	1.40/H	75.00/H	2.00/H	75.00/H	3.60/d	53.98
Los Angeles	64.00/F	60.50/F	40.33/c,F	64.50/F	75.00/F	125.00/F	80.00/F	76.00/c,F	83.00/F	1.35/c	64.00	4.40/g	.....
Minneapolis	75.00/F	65.00/F	40.44/c,I	80.00/F	78.00/F	140.00/F	78.00/F	2.00/g,F	80.00/F	1.80/F	80.00/F	5.50/F	.....
Montreal	56.00/M	47.30/M	36.39/M	53.00/M	63.25/M		63.00/M	1.50/M	66.00/M	1.50/M	66.00/M	9.00/g,M	56.00/M
New Orleans	60.00	52.00	45.00	60.00	67.00	140.00	80.00	2.00	65.00/c			.....	.....
New York	55.25	47.25	36.25	54.25	75.00	120.00	75.00	1.55/b	68.50		68.50	4.38/c	54.50/c
Philadelphia	55.60/V	50.55/V	36.10/V	52.57/V	68.73/V	105.110/V	55.65/V		60.70/V		70.75/V	5.60-6.34/V	40.50/V
Pittsburgh	74.00/K	65.00/K	40.00/K	63.00/K	62.50/K	102.50/K	57.50/K	1.05/c,K	55.00/K	1.05/c,K	55.00/K	3.80/g,K	38.50/K
St. Louis	67.00/H,O	56.50/H,O	40.00/H,O	70.00/H,O	76.00/H,O	121.50/H,O	80.00/H,O	1.35/g,H,O	85.00/H,O	2.00/g,P,H,O	74.00/H,O	4.50/g,H,O	.....
San Francisco	57.00/F	48.00/F	40.35/c,F	58.00/F	68.00/F	109.00/F	67.00/F	1.60/F	66.50/F	1.60/F	66.50/F	4.95	55.00/F
Seattle	68.30/K	57.65/K	51.05/K	65.00/K	74.50/K	125.00/K	73.50/K	1.60/g,K	72.00/K	1.90*/g,K	50.00*/K	4.25/K	46.50/E,K
Toronto	61.00	50.00	38.00/I	64.50	75.00		75.00	1.50	62.50		62.50	16.00/e	46.00

[*] F.o.b. warehouse. [a] Semi thick. [b] 30-bag. [c] 12' to 24' width. [d] 40-kraft paper, 5 Msf, 100-500 rolls. [e] 20-sq ft bag, 4" thick. [f] Full trailer loads. [g] 80-kraft paper backing 400 rolls or over. [h] LCL. [i] 40/. [j] 80/. [k] 2". [l] 8 to 10 ton quantities. [m] Distributor's siding. [n] Per Msf roll. [o] 32-bag. [p] 500 sf. [q] Per cwt. [r] 35-bag. [s] 26-bag. [t] Flame proof $75. [u] F.o.b. city. [v] Sq. yd. [w] 30-bag. [x] Spun rock wool. [A] 650 sf. [B] ton. [C] F.o.b. plant, freight allowed. [D] CL. [E] 10 Msf. [F] less 2%, disc, 10th. [G] 1½ of 1%, 10 days. [H] 2%, disc, 10 days. [I] 1%, disc, 10 days. [K] less 2%, for cash. [L] 5%, disc, 10th mo. [M] fed. tax incl. [N] 1%, disc, 10 days. [O] add 2% sales tax. [P] 50 lb. bags.

MEXICO CITY WAGES & PRICES

WAGES, av per hr, 8 hr day	Mar. '59	Feb. '59
Common labor, building (peons)	1.57	1.57
heavy const (peons)	2.00	2.00
Skilled labor, carpenters [c]	3.25	3.25
bricklayers [c]	2.87	2.87
struct. ironworkers	4.38	4.38

MATERIALS PRICES, F.o.b. City		Mar. '59	Feb. '59
Struct. steel shapes, fob Monterrey			
I-beams, 3 x 3 x 4"	per metric ton	2100	2100
Reinf. steel, corrugated rods, per ton			
¾" x 1" x 11 meters		2000	2000
¾" x 1" x 11 meters		2000	2000

		Mar. '59	Feb. '59
Gravel, truckload at 3½ cu meters			
Blue gravel		96.00	96.00
Rose gravel		90.00	90.00
Cement, std. port. (Tolteca)		240.00	240.00
Lumber, ¾" pine	per M ft.	1900.00	1900.00
1½" pine	per M ft.	1900.00	1900.00

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—LB & CA

▲ Perini Corp., 73 Mt. Wayte Ave., Framingham, Mass., CA Est. $29,000,000, vehicular tunnel under Boston Harbor, East Boston, BOSTON, MASS.: Mass. Port Auth., 14 Court Square, Boston, Mass.; Singstad & Baille, 24 State St., New York, N. Y., engrs.: CD 3/3, 47.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—LB & CA

▲ NEW YORK—State Dpt. P. Wks., State Office Bldg., Albany,

Bero Constr. Corp., P.O. Box 70, West River Rd., Waterloo, N. Y., CA $2,024,296, est. $2,350,000; c. conc. pavement, etc. 2.23 mi. Rtes. 5 and 20, City of Geneva, Lake Front Arterial, Pt. 2, Geneva Lake Front East Hy. connection. Proj. U-0G-452 (7), Seneca and Ontario Counties. Bids Dec. 11. CD 2/12, under LB.

▲† Malan Constr. Corp., 2 Park Ave., New York, Zone 16, N. Y., CA $2,716,237, Phase I and Phase II, Missile Master Electronic Air Defense Facilities, Pittsburgh Defense Area, Collier Twp., Oakdale, Allegheny Co., ENG-36-058-59-20, PENNSYLVANIA: U. S. Eng., 925 New Federal Bldg., Pittsburgh 19, Pa. Bids Mar. 12, awarded Mar. 19. CD 3/16, under LB.

BUILDINGS—LB & CA

▲ Geo. F. Driscoll Co. & Moccia Constr. Corp., 41 E. 42nd St., New York 17, N. Y., LB $7,494,571 (7 bidders), foundations, general constr. Samuel J. Tilden HOUSES, Proj. No. NY-5-34, in area bounded by Dumont, Stone, Livonia and Rockaway Aves., BROOKLYN, N. Y.: New York City Housing Auth., 299 Broadway, New York 7, N. Y. Bids Mar. 19. CD 3/3.

Lipsky & Rosenthal, Inc., 155 Utica Ave., Brooklyn, N. Y., LB $929,363 (9 bidders), plumbing Samuel J. Tilden Houses (Brooklyn, N. Y.);

John G. Hellman Co., Inc., 507 E. 76th St., New York 21, N. Y., LB $537,000 (12 bidders), electrical work Samuel J. Tilden Houses (Brooklyn, N. Y.);

Harry Starkman & Bros., 348 Brook Ave., New York 54, N. Y., LB $648,400 (4 bidders), heating and ventilating Samuel J. Tilden Houses (Brooklyn, N. Y.).

▲ Psaty & Fuhrman, Inc., 369 Lexington Ave., New York, N. Y., CA Est. $2,000,000, 19 story APARTMENT, E. 17th St. and 1st Ave., NEW YORK, N. Y.: Beth Israel Hospital, Stuyvesant Square and E. 17th St., New York, N. Y.; Schuman & Lichtenstein, 369 Lexington Ave., New York, N. Y., archts.

▲ Timber Lane Bldrs., Inc., 464 Springfield Ave., Summit, N. J., Owner Builds, $1,500,000, 5 story, 130 unit APARTMENT, Union Ave., HILLSIDE, N. J.; Peter M. Grygotis, 306 Aldene Rd., Roselle, N. J., archt.

▲ Hardy Assocs., Inc., 301 Old York Rd., Jenkintown, Pa., Separate Contracts, $2,128,000, RESIDENTIAL DEVELOPMENT (133) Twining Rd., etc., AMBLER, PA.: Lester H. Weckesser, 16 Montana Ave., Enlton, N. J., archt.

▲ Rocco Bono Constr. Co., 54 Phillips St., Sharon, Pa., CA Est. $1,631,551, Mercer COUNTY HOME, MERCER, PA.: Mercer County, Mercer, Pa.; Joseph Bontempo, Baker Bldg., Rochester, Pa., archt.

▲ Hardy Assocs., Inc., 301 Old York Rd., Jenkintown, Pa., Separate Contracts, $3,400,000, RESIDENTIAL DEVELOPMENT (200) Newtown Rd., etc., WARMINSTER, PA.: Lester H. Weckesser, 16 Montana Ave., Enlton, N. J., archt.

▲ Consolidated Engineering Co., Inc., 20 E. Franklin St., Baltimore, Md., CA $7,769,000, 250-bed HOSPITAL, incl. NURSES' HOME, HEATING PLANT, Wilkins and Caton Aves.; BALTIMORE, MD.: St. Agnes Hospital, Wilkins and Caton Aves., Baltimore, Md. Bids Mar. 4. CD 3/9, under LB.

▲ Haddock Constr. Co., Elsmere, Del., CA $2,300,000, HOME for AGED, WILMINGTON, DEL.: Peninsula Conference of The Methodist Church, 1213 Delaware Ave., Wilmington, Del. Bids Feb. 24. CD 3/13, under LB.

SOUTH

HEAVY CONSTRUCTION—LB & CA

▲ SOUTH CAROLINA—State Hy. Dpt., Hotel Jefferson, Columbia. Bids opened 3/17.

S. C.—Sloan Constr. Co., Inc., Peoples National Bank Bldg., Greenville, S. C., LB $2,157,724 (9 bidders) b. conc. 13.725 mi. Int. Rte. 85, S. C. Dockets Nos. 11,347-1 and 11,352-1, F. A. Proj. Nos. I-85-3 (22), (I-301-2 (7)), & I-85-3 (15) (I-301-2 (10)), Cherokee Co.; LB $99,887 (4 bidders), hot laid b. conc. (Type 2) resurf. 19.35 mi. State Rtes. 183, 135, and U. S. 123, S. C. Docket No. 39,1066, Pickens Co.; LB $100,729 (4 bidders), hot laid b. conc. (Type 2) and hot laid b. conc. binder course (Type 2) resurf. 17.67 mi. U. S. Rtes. 25 and 29, State Rtes. 250 and 291, Rds. 30,186,107 and 46, S. C. Dockets Nos. 23,384-1 and 23,1080, F. A. Proj. F-254 (3), Greenville Co.; LB $109,021 (6 bidders), hot laid b. conc. resurf. 24.68 mi. US Rte. 29 By-pass, U. S. Rte. 76, State Rte. 247, Rds. 338, 341, 350, 351, 355, 357, 409, 410, 411, 412, 414, 415, 416, 417, 418, 419, 420, 421, 423, 424, 425, 426, 427, 429, 501, 589, 397, 398, & 399, S. C. Dockets Nos. 4,1069, 4,474 and 4,475, Anderson Co.;

S. C.—Claussen-Lawrence Constr. Co., 1343 Gwinnett St., Augusta, Ga., LB $307,085 (7 bidders), hot laid b. conc. (Type 2) and hot plant mix sand asphalt resurf. 48.3 mi. State Rtes. 61, 642 & 700, Rds. 20, 28, 29, 47, 54, 60, 62, 63, 86, 93, 95, 103, 105, 307, 308, 379, 566, 459 and 659, U. S. Rte. 17-A, State Rte. 165, Rds. 9, 65 and 199, S. C. Dockets Nos. 10,1069 and 18,1024, Charleston and Dorchester Counties. CD 3/5.

▲ GEORGIA—State Hy. Dpt., 2 Capitol Sq., S.W., Atlanta. Bids opened 3/20.

Ga.—Claussen-Lawrence Constr. Co., Box 840, Augusta, Ga., LB $3,993,990, 10.831 mi. 4-lane grading and conc. S.T. paving, 2 double bridges and 5 single bridge on Valdosta-Tifton Interstate Hy., I-40101 (14), I-75-1 (14), new, Cook Co.;

Ga.—Wainer Constr. Co., Inc., Box 1172, Valdosta, Ga., LB $492,847, 700 lin. ft. grading and c. conc. paving extension concrete underpass at Southern R.R. section of Atlanta, perimeter route, etc., I-407-1 (5) CT 2, I-285-1 (5), New DeKalb Co.;

Ga.—Shepherd Constr. Co., Inc., Box 8068, Station F, Atlanta, Ga., LB $2,061,622, 24.239 mi. widen, reconstr. c. conc. resurf., 2 bridges, 1 bridge, Talbotton-Macon Rd., F-004-1 (5), SR 22, Upson and Crawford Counties. CD 3/11.

▲ GEORGIA—State Hy. Dpt., 2 Capitol Sq., S. W., Atlanta. Bids opened 3/20.

H. M. Pafford, Jr., Box 145, Waycross, Ga., LB $1,939,210, 4 double and 10 single grade separation structures and 1 single railroad underpass on SR 29 to old U. S. 41 road, etc., I-IN-407-1 (2) CT 2, I-IN-285-1 (9) new, Fulton and Clayton Counties. CD 3/11.

▲† A. B. Newton & Co., Vidalia, Ga., LB $2,309,620, aircraft maintenance hangar and operations bldg., U. S. Naval Auxiliary Air Station, NBy-19982, Spec. 19982/58, MERIDIAN, MISS.: Dist. P. Wks. Office, Bldg. No. 13, U. S. Naval Base, Charleston, S. C. Bids Mar. 19. CD 2/20.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

▲ LOUISIANA—State Hy. Dpt., Rm. 307, Hy. Office Bldg., Baton Rouge. Bids opened 3/18.

Miller & Son, Hy. 90, Lake Charles, La., LB $2,466,637, grading, overpass structures and related work 0.305 mi., Lake Charles Expressway, Rte. I-10, SP. No. 740-00-13, FAP No. I-10-1(12)30, Calcasieu Parish. CD 3/9.

▲† J. A. Jones Co., 209 W. 4th, Charlotte, N. C., and Charles H. Tompkins Co., 1747 K N. W., Wash., D. C., (joint venture), LB $20,669,000 est. $25,356,000 (5 bidders), Markland Locks and Dam, Ohio River, Gallatin, CIVENG-15-029-59-44, KENTUCKY and INDIANA: U. S. Eng., P. O. Box 59, Louisville 1, Ky. Bids Mar. 19. CD 3/9.

▲† Tennessee Valley Auth., New Sprankles Bldg., Knoxville, Tenn.: Owner Builds, $4,300,000, 68 mi. power line from Lawrenceburg to Johnsonville, 61 mi. to be standard 161,000 volts; 7 mi. to be 460,000 volts, TENNESSEE.

MIDDLE WEST

BUILDINGS—BA

▲ Ind., Huntington—PRINTING AND PUBLISHING CENTER—BA. After 4:30—due Sunday Visitor, Inc., 1 and 2 story, 170,000 sq. ft. steel reinforced concrete, brick, concrete blocks, etc., printing and publishing center, 14-acre tract on U.S. No. 24 and Ind. Rtes. 9 and 37 adjacent to Erie Railroad, $3,000,000. Max Pohlmeyer & Assocs., Charles J. Malott & John L. Sissenhammer, 262 Central Bldg., Fort Wayne, archts. CD 7/15.

HEAVY CONSTRUCTION—LB & CA

▲ Arcole-Midwest Corp., 3225 Main St., Skokie, Ill., LB $1,905,000 (7 bidders), grading, over 3,000,000 cu. yd. earthmoving, removal and relocation of railroad spur, O'Hare Field, CHICAGO, ILL.: Dpt. Purchases, City Hall, Chicago, Ill. Bids Mar. 20. CD 3/11.

▲† A. J. Etkin Constr. Co., 1011 Capitol St., Oak Park, Mich., CA $2,022,346, operations, industrial and warehouse bldgs., incl. utilities, K. I. Sawyer Air Force Base, ENG-20-064-59-46, MARQUETTE, MICH.: U. S. Eng., 1101 Washington Blvd., Detroit 26, Mich. Bids Feb. 26. CD 2/9.

BUILDINGS—LB & CA

▲ The R. C. Mahon Co., 6565 E. 8-Mile Rd., Detroit, Mich., CA Total est. $7,500,000, furnishing, fabricating, erecting structural steel for 750,000 sq. ft. WAREHOUSE, LANSING, MICH.: Oldsmobile Div., General Motors Corp., General Motors Bldg., Detroit, Mich. CD 3/10.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—LB & CA

▲† H. Halverson, Inc., 11 North 5th St., Grand Forks, N. D., CA $2,332,000, relocation bldg. and facilities, Cheyenne River Agency to Eagle Butte, Oahe Reservoir Proj. near Pierre, ENG-25-066-59-59, SOUTH DAKOTA: U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Feb. 25. CD 3/4, under LB.

▲† Air Force Academy Construction Agency, P. O. Box 1670, Attn: AFOIE-6-22, Colorado Springs, Colo., rejected bids, Air Force Academy Chapel (FEB-05-613-59-10, COLORADO SPRINGS, COLO.: LB $3,831,781. CD 2/20, under LB.

BUILDINGS—LB & CA

▲ D'Arcy Leck Constr. Co., 2838 Stevens Ave., Minneapolis, Minn., CA $7,600,000, 18 story Calhoun Towers APARTMENT, Excelsior Blvd. and West 32nd St., MINNEAPOLIS, MINN.: T. F. Chapman, 3824 Pillsbury Ave., and D. J. M. Leck, 2838 Stevens Ave., both Minneapolis, Minn. Brandhorst & Leadholm, 7600 Hy. 7, Minneapolis, Minn., archts. CD 1/27.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† California—BA 4/14—U. S. Eng., 751 S. Figueroa St., Los Angeles: Big Dalton Wash Channel and Little Dalton Wash Diversion Channel, Glendora, ENG-04-353-59-29, $3,500,000. CD 9/23.

▲ Calif., Los Angeles—BA 4/17—Los Angeles County Flood Control Dist., 2250 Alcazar St., Storm Drain Proj. No. 14, Unit 2, DDI No. 26, Relief Trunk, approx. 4,000 ft. 14 ft. 6 in. x 10 ft. 6 in. rein.-con. box conduit, $3,000,000. CD 11/10.

▲ California—BA 4/30—Oroville-Wyandotte Irrigation Dist., Oroville, South Fork of Feather River Proj. and adjoining territory, east of Oroville, Plumas Sierra, Butte and Yuba Counties, consisting of following:

Sched. 1, furnish concrete aggregates. Plans deposit $3.

Sched. 2, Little Grass Valley Dam and Reservoir. Plans deposit $10.

Sched. 3, Sly Creek Dam and Reservoir. Plans deposit $10.

Sched. 4, Slate Creek Storage Dam and Reservoir and Ponderosa Dam and Reservoir. Plans deposit $10.

Sched. 5, South Fork Diversion Dam and Tunnel, and Slate Creek Diversion Dam and Tunnel. Plans deposit $12.

(Continued on page 68)

BIG AD CAMPAIGN WARNS OF GROWING WATER PROBLEM!

Urges local support for better water systems

CAST IRON PIPE RESEARCH ASSOCIATION OFFERS LOCAL PLAN-OF-ACTION BOOKLET

Here's help for consulting engineers and everyone else directly concerned with the supply, treatment and distribution of water—help that will acquaint the general public and community leaders with the vital importance of this growing problem.

On the opposite page you see the second in a series of advertisements, this one appearing in April *Reader's Digest*. Placed by the Cast Iron Pipe Research Association, these striking advertisements point out to Mr. and Mrs. America how much we depend on a good water system and why we can no longer take it for granted.

Similar advertising will appear regularly in *U. S. News & World Report*, *Nation's Business*, *Better Homes & Gardens*, *American Home* and *Sunset* magazines to carry this public service message to millions of civic leaders and homeowners.

FREE LOCAL HOW-TO-HELP BOOKLET

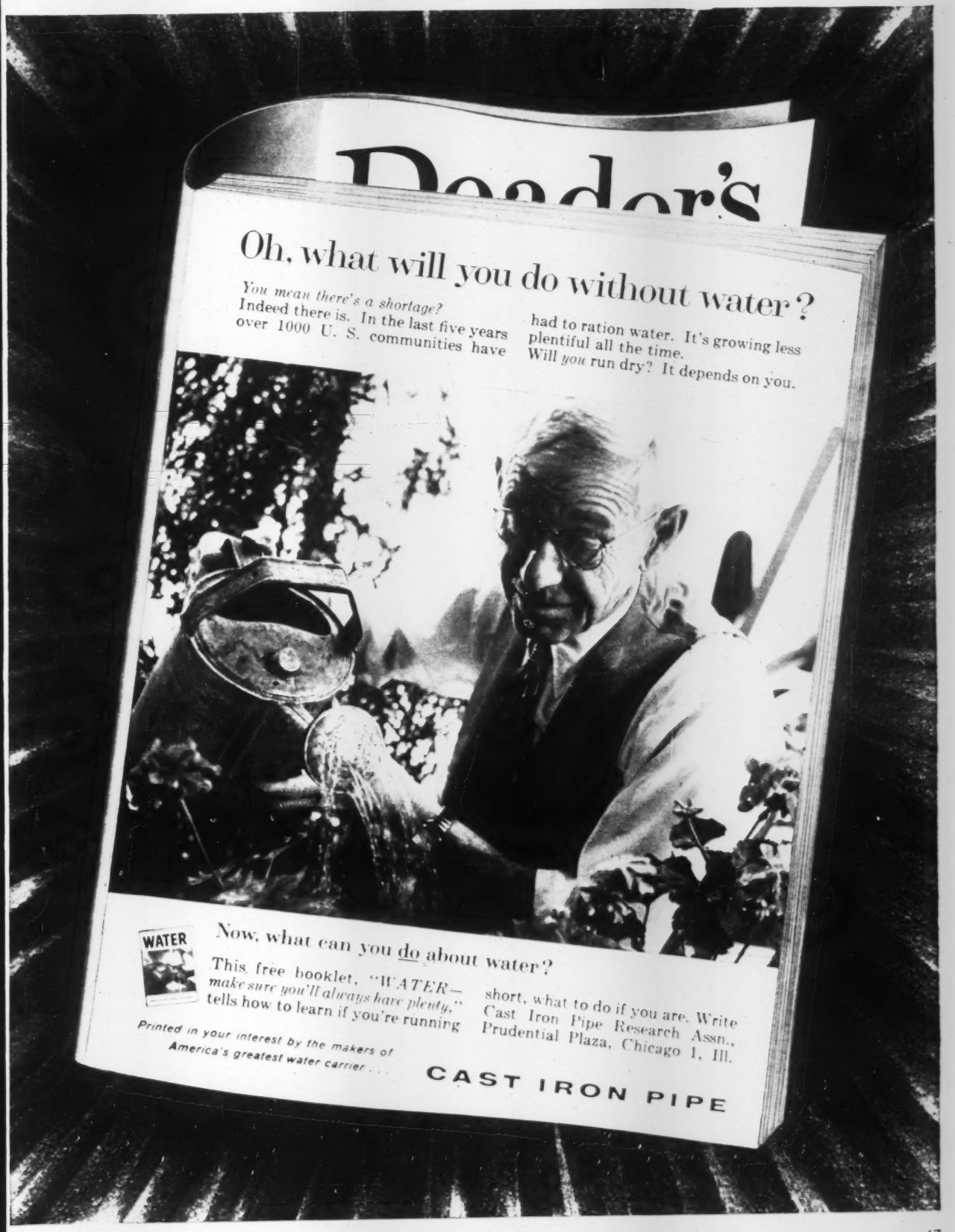
These ads offer a free booklet telling about the water problem. It shows how responsible citizens can acquaint themselves with the needs of their community. It also gives a step-by-step outline of action, telling how they can help their officials extend and improve the local water system through more adequate rate structures or financing.

Let us send you a free copy of this new booklet. Write to Thos. F. Wolfe, Managing Director, Cast Iron Pipe Research Association, 3440 Prudential Plaza, Chicago 1, Ill.

THREE REASONS WHY CAST IRON PIPE IS *AMERICA'S GREATEST WATER CARRIER:*

1. More miles of underground cast iron water mains are now in use than of all other kinds of pipe combined.
2. More miles of cast iron water mains are now being purchased and laid than of any other kind of pipe.
3. Impartial surveys prove that today's consulting engineers and water utility officials prefer cast iron pipe for underground water distribution by an overwhelming majority.

CAST IRON PIPE

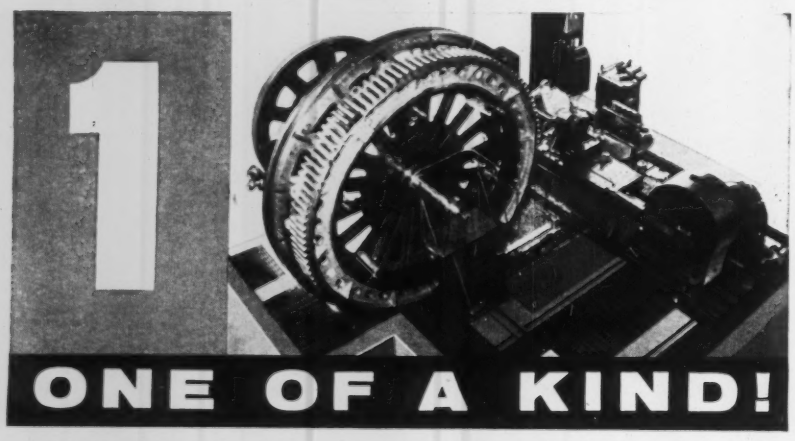

Reader's
Oh, what will you do without water?
You mean there's a shortage?
Indeed there is. In the last five years over 1000 U. S. communities have had to ration water. It's growing less plentiful all the time.
Will you run dry? It depends on you.
WATER
Now, what can you do about water?
This free booklet, "WATER—make sure you'll always have plenty," tells how to learn if you're running short, what to do if you are. Write Cast Iron Pipe Research Assn., Prudential Plaza, Chicago 1, Ill.
Printed in your interest by the makers of America's greatest water carrier . . .
CAST IRON PIPE

MASTER MECHANICS CORNER:

R. C. Winner
Inter-Lake Iron Corp.
Beverly, Ohio

"After a couple of years I'm still amazed at the Caterpillar Oil Clutch. It stays in adjustment longer than other clutches stay together. It's a real top performer."

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.
Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.



This specially designed versatile, internal-external **PRECISION** spur gear cutter is the only one of its type and range in modern industry . . . Cuts any desired pitch or tooth form . . . Max. O.D. 22", Max. I.D. 12" . . . It has cut giant gears for use in Kilns, Crushers, Sugar Mills, Cement Mills, Rotary Dryers & Power Shovels.

THE TOUGH JOBS GO TO EARLE

- SPECIAL MECHANISMS
- SPEED REDUCERS
- SPROCKETS
- SHEAVES

THE EARLE GEAR & MACHINE CO.
4707 STENTON AVENUE
PHILADELPHIA 44, PA.

Earle Gear & Machine Co.
Gentlemen:
☐ Please send me your catalog on operating mechanisms . .
☐ Please contact me about . . .
.....
Name_____
Address_____
City_____

(Continued from page 65)

Sched. 6, Woodleaf Tunnel and Lost Creek Dam Repairs. Plans deposit $12.

Sched. 7, Forbestown Diversion Dam and Tunnel. Plans deposit $12.

Sched. 8, Woodleaf Penstock, surge tank and powerhouse; Forbestown Penstock, surge tank and powerhouse; Kelly Ridge Penstock and powerhouse; misc. bldgs; service power and communication lines. Plans deposit $30.

Sched. 9, Miner's Ranch Canal and Tunnel; Miner's Ranch Dam and Reservoir; Kelly Ridge Canal and Tunnel; Bangor Irrigation Canal; and Mt. Ida Irrigation Canal. Plans deposit $15. Plans deposit complete set all specifications and drawings (reduced size) listed above $50. Bechtel Corp., 101 California St., San Francisco, engrs. CD 12-22.

▲ Washington—BA 5/8—Grant County Public Utility Dist., Ephrata, 831,250 kw Wanapum Dam on Columbia River. Total est. $200,000,000. CD 11-21-55.

BUILDINGS—SLC

▲ Calif., San Fernando—HOSPITAL—Sisters of the Holy Cross, c/o Verge & Clatworthy, archts., 4342 Eaglerock Blvd., Los Angeles, soon lets contract 6-story, reinf.-con. hospital, near here. $5,000,000.

HEAVY CONSTRUCTION—LB & CA

▲† J. N. Conley and G. D. Dennis & Sons, 4332 NE Royal Court, Portland, Ore., LB $2,890,100, est. $3,213,800 (14 bidders), two rubble-mound jetties, Rogue River entrance, CIVENG-35-026-59-109, OREGON. U. S. Eng., Pittock Block, Portland, Ore. Bids Mar. 17. CD 2-5.

▲ CALIFORNIA—State Div. Hys., 1120 N. St., Sacramento.

Granite Constr. Co., P. O. Box 900, Watsonville, Calif., CA $2,410,766, grading, surf. to constr. 4.9 mi. expressway, Redwood Hy. (US 101) between 0.9 mi. south of Irvine Lodge and 0.8 mi. north of Sherwood Rd., about 15 mi. north of Willits, Mendocino Co. Bids Feb. 25, awarded Mar. 18. CD 2-27, under LB.

▲ CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles.

Massey Sand & Rock Co. and Silva & Hill, P. O. Box 695, Indio, Calif., CA $1,757,460 (joint venture), grade, surf. to constr. 9 mi. 4 lane freeway, U. S. 60, 70, 99 between Indio and Thousand Palms, incl. bridge over Southern Pacific R. R. tracks, Washington St. traffic separation bridges at 3 locations, interchange facilities, Riverside Co. Bids Mar. 5, awarded Mar. 20. CD 3-9, under LB.

▲ CALIFORNIA—State Div. Hys., 1120 N. St., Sacramento.

John Delphia, Fred J. Early, Jr., Co., Inc., and L. A. & R. S. Crow, P. O. Box 607, Patterson, Calif., CA $2,288,888 (joint venture), grading, surf. to constr. 3.7 mi. 4 lane freeway east of present highway, U. S. 101 between Little River and 0.2 mi. north of Trinidad, incl. bridge over freeway at 6th St. in vicinity of Westhaven, traffic separation bridges at 2 locations, interchange facilities, I-Hum-1.1 Fm. D, Humboldt Co. Bids Mar. 4, awarded Mar. 20. CD 3-6, under LB.

▲† Griffith Co., 1060 South Broadway, Los Angeles 15, Calif., CA $3,850,655, Los Angeles River improvs., Sate St. to Randolph St., Los Angeles, ENG-04-353-59-23, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 5. CD 3-10, under LB.

▲† Hydraulic Dredging Co., Ltd., Central Bldg., Oakland, Calif., LB $4,145,800, est. $5,896,700 (9 bidders), 9.1 mi. section Sacramento Deep Water Channel, dredging 21,630,000 cu. yd. material, Yolo Co., Spec. 2534, ENG-04-167-59-52, CALIFORNIA. U. S. Eng., 1209 8th St., Sacramento, Calif. Bids Mar. 20. CD 3-18.

▲† Oberg Constr. Co., 19421 Plummer St., Northridge, Calif., LB $2,310,247 (16 bidders), Santa Ana River Basin, Carbon Canyon Dam and appurtenances, ENG-04-353-59-25, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 18. CD 2-24.

BUILDINGS—LB & CA

▲ Kaiser Engineers, Div. Henry J. Kaiser Co., 1924 Broadway, Oakland, Calif., Owner Builds, $4,211,150 CRUSHING AND LOADING FACILITIES, Eagle Mountain Mine, Desert Center, Riverside Co., CALIFORNIA.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ K. J. Beamish Constr. Co. Ltd., Box 184, Thornhill, Ont., LB $2,336,110, Don Valley Parkway, Leaside viaduct to East Branch of Don River, grading, paving, drainage, river relocations, incl. Check Dam, Don Mills Rd. interchange and 4 steel bridges, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Bids Mar. 17. CD 2-17.

Robert McAlpine Ltd., P. O. Box 239, Weston, Ont., LB $565,129, F. G. Gardiner Expressway, elevated structure abutment at Station 187 plus 00 to Station 192 plus 15 and entrance road to Canadian National Exhibition from Strachan Ave., TORONTO, ONT.

▲ Louis Donolo, Inc., 8430 St. Lawrence Blvd., Montreal, Que., CA $3,107,777, standard intermediate cantilever hangar, Royal Canadian Air Force Base, CD 2-27, under LB; CA $797,765, standard wartime preparedness hangar and standard maritime anti-corrosion hangar, Royal Canadian Air Force Base, CD 3-5, under LB, SUMMERSIDE, P.E.I. Defence Constr. (1951) Ltd., 66 Lyon St., Ottawa, Ont. Awarded Mar. 17.

BUILDINGS—LB & CA

▲ Vancouver Industrial Leasehold Ltd., 13040 Georgia, Vancouver, B. C., CA Est. $10,000,000, 400,000 sq. ft., 30 acre SHOPPING CENTER incl. department store, super mart, bank, 40 stores, 2,500 car parking.

(Continued on page 71)

BRIXMENT MORTAR

Is Sound — Stays Sound

In these autoclave tests, neat cement bars were exposed to 295 lbs. steam pressure, 420°F., for 3 hours. Left: The two bars are both Brixment. Note that it is sound — it has not expanded. Right: The two bars were made of one part portland cement and one part of a lime which does not meet the autoclave test. Note the expansion — proof of unsoundness.

AND SOUND MORTAR IS ESSENTIAL FOR STRONG, DURABLE MASONRY

Some mortars may contain constituents which can cause them to expand or "grow" after long exposure to weather. Such mortar is called "unsound".

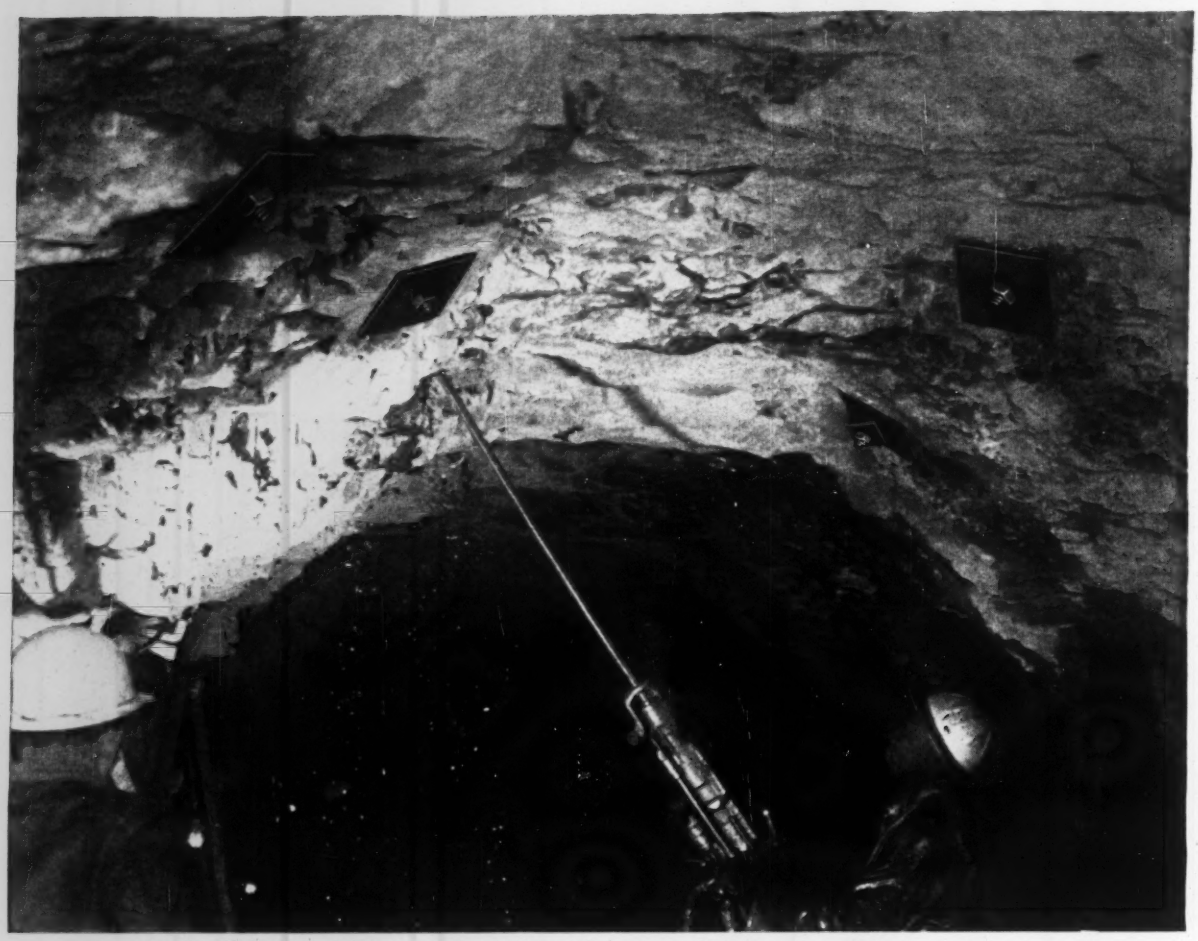
The quality of soundness is easily proved by the autoclave test — an accelerated test under great heat and pressure in a steam chest.

Brixment makes sound mortar. It easily meets the autoclave test requirements included in Federal and ASTM Specifications for masonry cement.

Soundness is only one of many advantages which have helped make Brixment the most widely-used masonry cement on the market. It will be worth your while to hear *all* the advantages of Brixment the next time a Brixment salesman calls on you. Or write direct for full details. Address: Louisville Cement Company, Louisville 2, Kentucky.

LOUISVILLE CEMENT COMPANY, LOUISVILLE 2, KENTUCKY

Cement Manufacturers Since 1830



Installing Bethlehem rock bolts in tunnel roof. *General Contractors and Engineers:* James McHugh Construction Co.

Wedge-Type Bolts Support Roof of Buffalo Sewer Tunnel

A new storm relief sewer in Buffalo, N. Y., provides additional protection for property in a semi-business area. The horseshoe-shaped tunnel, authorized by the Buffalo Sewer Authority, was bored through solid Onandaga limestone. It is approximately 9 ft in diameter, and about 6800 ft long. Bethlehem slotted rock bolts were used in the tunnel roof, to provide firm support.

BOLTS LOCK ROCK SLABS TIGHTLY

Bethlehem rock bolts are ideal for supporting tunnel roofs because they lock together stratified rock slabs. They are strong, easy to install, and provide an extra margin of safety.

The 1-in. diam slotted bolts, threaded at one end, have a forged slot at the opposite end, which accommodates a steel wedge. The bolts are inserted wedge-first into drilled holes. When the back of the hole is reached, the wedge drives deep, spreading the bolt ends so that they anchor in the hole.

Bethlehem also produces $\frac{5}{8}$-in. and $\frac{3}{4}$-in. diam headed rock bolts, used with an expansion shell and a steel plug. When this bolt is tightened, the plug is drawn down on the threads, expanding the serrated leaves of the shell.

If you have any question about the use of Bethlehem rock bolts, or rock bolt accessories, all you need do is get in touch with the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

(Continued from page 68)

BURNABY, B. C.—Webb & Knapp, 2030 Georgia, Vancouver, B. C. CD 2-25.

LATIN AMERICA

BUILDINGS—LB & CA

▲ Hitachi Ltd., Tokyo, Japan, CA. Est. $6,300,000, 30,000 kw. THERMAL POWER PLANT, at Barrancaneras, Chaco Province, ARGENTINA. Argentine Water & Power Bd., Buenos Aires, Argentina. CD 2-28-57.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ Kaiser Engineers & Constructors, Inc., 1942 Broadway, Oakland, Calif., U.S.A., CA design and construct REACTOR BLDG., LABORATORIES and other facilities, Nuclear Research Reactor at Institute of Nuclear Research, Dalat, VIETNAM. Office of Atomic Energy, Vietnam, Saigon.

General Atomics Division, General Dynamics Corp., 10955 John Jay Hopkins Dr., San Diego, Calif., U.S.A., CA Triga Mark 11 Reactor (Vietnam).

PROPOSED PROJECTS

SEWERS, WASTE DISPOSAL

▲ Calif., Santa Ana—Orange County Sanitation Dist. No. 7, 1104 W. 8th St., defeated $2,230,000 bonds Mar. 10, sewers. CD 2-4.

▲ Ore., Salem—City Hall, sewer and sewage treatment plant, $2,000,000. Cornell, Howland, Hayes & Merryfield, 1600 Western Ave., consult. engrs. CD 9-2.

BRIDGES

▲ NEW YORK—State Bridge Auth., State Office Bldg., Albany, Zone 1.

Tarrytown-Beacon Bridge over Hudson River, $40,000,000. Modjeski & Masters, 900 N. 6th St., Harrisburg, Pa., consult. engrs. Bids in May. CD 7-13-55.

▲ WEST VIRGINIA—State Road Comm., Charleston, Zone 5.

Cabell Co.—Big Sandy River Bridge west of Huntington to Kentucky, $5,500,000.

STREETS AND ROADS

▲ DELAWARE—State Dist. Hys., Dover.

New Castle Co.—6 lane limited access Interstate Hy. (FA 1-1), 2 interchanges, 8 structures from Maryland State Line to Memorial bridge near Wilmington, $7,000,000. Goodkind & O'Dea, 610 Bloomfield Ave., Bloomfield, N. J., consult. engrs.

▲ MAINE—State Hy. Comm., State House, Augusta.

Kennebunk-Portland—20 mi. Turnpike repairs, $7,000,000.

▲ WEST VIRGINIA—State Road Comm., Charleston, Zone 5.

Berkeley Co.—13 mi. Interstate 81, $10,604,000.

Cabell, Putnam and Kanawha Counties—Interstate 64 from Milton to the Kanawha River at Nitro, $15,000,000.

Cabell Co.—Interstate 64 from Big Sandy River West of Huntington to Barboursville, $39,429,000.

Jackson and Kanawha Counties—18 mi. Interstate 77 between White Chapel and Fairplain, $19,962,000.

Kanawha Co.—constr. section of Interstate 77 from White Chapel to Guthrie, at cost of approx. $945,000 to be let this year, $11,497,000.

Ohio Co.—2.5 mi. Interstate 70, $4,363,000.

EARTHWORK, WATERWAYS

▲ New York—Conewago Valley Flood Control Assn., Randolph, N. Y., flood control and stream imprvs., dams, floodwater retarding, debris basins, dredging and canal work, Randolph, $3,817,825.

AIRPORTS

▲† Idaho, Mountain Home—UNDERGROUND MISSILE LAUNCHING FACILITIES—U. S. Eng., City-County Airport, Walla Walla, Wash. Titan underground missile launching facilities, $50,000,000. No appropriation.

▲† Kan., Salina—LAUNCHING FACILITIES—U. S. Eng., Federal Office Bldg., Kansas City, Mo., launching facilities, Atlas Missile Base, near Schilling Air Force Base, $30,000,000 (no appropriation).

▲ Mass., East Boston—AIRPORT OFFICE—Boston Port Auth., Logan Airfield, second story airport office addn., $6,000,000. Constr. 1959. CD 4-22-52.

▲† S. D., Rapid City—UNDERGROUND LAUNCHING FACILITIES—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., underground launching facilities, Titan Missile site, near Ellsworth Air Force Base, $50,000,000 (no appropriation).

PUBLIC BUILDINGS

▲ Ala., Birmingham—RESIDENCES—University of Alabama Medical Center, plans by Shaw & Remmler, 2801 Arlington Ave., nurses residences, $2,000,000. Bids 1959; plans by Henry Sprott Long, Brown-Marx Bldg., apartment housing for faculty and medical students, $2,000,000. Constr. 1959. CD 12-27-57.

▲ Calif., San Jose—ADMINISTRATION, etc.—Bd. Supervs., Santa Clara Co., voted $6,278,000 bonds Mar. 10, civic center facilities, 7 story admin. bldg., registrar of voters bldg., motor pool bldg. CD 7-2-57.

▲ Calif., San Jose—COURT—Bd. Supervs., Santa Clara Co., voted $5,600,000 bonds Mar. 10, court bldgs. in city and court facilities in 6 scattered districts.

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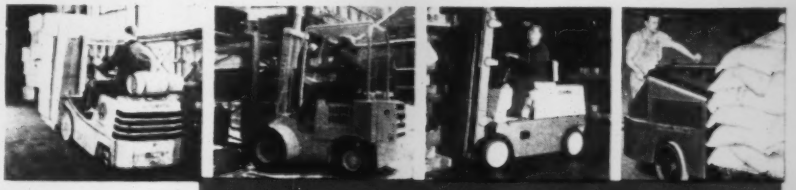

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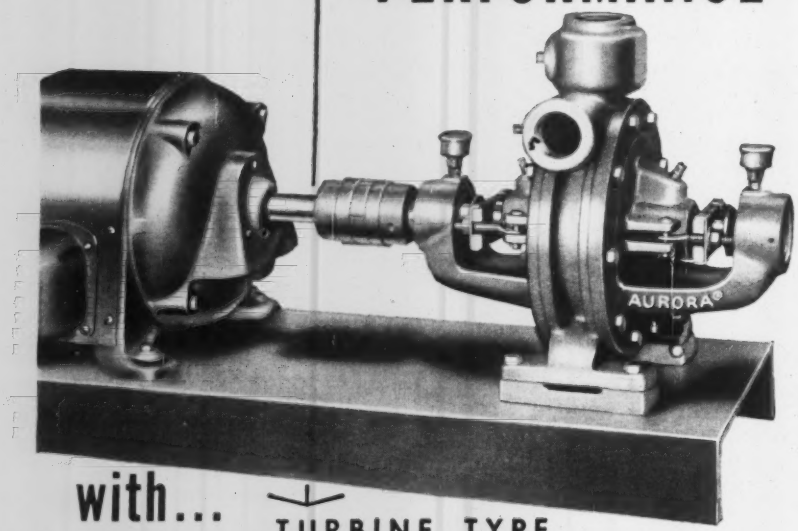

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▲ Calif., San Jose—HEALTH, WELFARE—Bd. Supervs. Santa Clara Co., voted $3,271,000 bonds Mar. 10, health and welfare bldgs. in city and other parts of county.

▲ Conn., Enfield—PRISON—Conn. State Prison Bd. Directors, Wethersfield, plans by LaPierre & Litchfield and Alfred Hopkins & Assocs., 292 Madison Ave., New York, N. Y., Connecticut State Medium Security Prison, $12,500,000. Fred S. Dubin Assocs., 178 S. Whitney, Hartford, consult. engrs. CD 10/15.

▲ Conn., Norwalk—INSTITUTE—State P. Wks. Dir., 165 Capitol Ave., Hartford, plans by Lyons & Mather, 211 State St., Bridgeport, steel, Regional Technical Institute, Richards Ave., $2,840,000. Bids 1959.

▲ Ill., Chicago—HOUSING—Chicago Housing Auth., 608 S. Dearborn St., Zone 5, plans by Shaw, Metz & Dolio, 208 S. La Salle St., Zone 4, nine 18 story, brick, rein.-con. apartments, central boiler plant, 47th to 51st Sts. along State St., Ill. 237-Stage 3, $15,400,000. Bids about Nov. 10. CD 8/5.

▲ Ill., Chicago—HOUSING—Chicago Housing Auth., 608 S. Dearborn St., Zone 5, plans by Schiller & Frank, 23 E. Jackson Blvd., Zone 4, Madden Park Homes, 4 story, concrete block, brick apartments, 39th to 47th Sts. along Cottage Grove Ave., Ill. 233-Stage 1, $6,400,000. Bids about May 5; plans by Leonard Wayman & Assocs., 11 S. LaSalle St., Zone 3, and Wm. W. Benn & Assocs., 7 S. Dearborn St., Zone 3, three 14 story, rein.-con., brick apartments, 4 story houses, 39th to 47th Sts. along Cottage Grove Ave., Ill. 233-Stage 2, $8,500,000. Bids about Sept.—15.

▲ Ill., Danville—SCHOOLS—Bd. Educ., 202 E. Fairchild St., voted bonds Mar. 7, three Junior High Schools, $4,000,000. CD 2/13.

▲ Ind., Anderson—HOSPITAL—Anderson-Madison County Hospital Development Bd., c/o Comrs., plans by Arthur B. Henning, 514 Anderson Bank Bldg., hospital on 21 acre site on Madison Ave., northwest edge of here, $2,250,000. Bids in September. CD 11/29/57.

▲† Me., Bangor—HOUSING—U. S. Eng., 424 Trapelo Rd., Waltham, Mass., plans by Crowell, Lancaster, Higgins & Webster and Pedersen & Tilney, 6 State St., 480 unit Capehart housing, Dow Air Force Base, $7,000,000. CD 1/15.

▲ N. J., Cinnaminson—SCHOOL—Cinnaminson Twp. and Riverton & Palmyra Bds. Educ., Cinnaminson, Regional Junior-Senior High School, $2,300,000.

▲ N. J., Plainfield—HOUSING—Housing Auth. of Plainfield, 543 W. 3 St., plans by Ernest T. Brown, 7 Watchung Ave., housing, $2,000,000.

▲ N. Y., Elmira—SCHOOLS—Bd. Educ., City Hall, plans by Considine & Haskell, Hulet Bldg., Elmira, N. Y., Broadway elementary and Junior High School, $2,300,000. Charles W. Personius, 1236 Penn Ave., Pine City, engr.

▲ O., Canton—SCHOOL—Plain Local School Dist., 3900 Frazer Ave. N.W., bond election May 5, school addns., $2,550,000. CD 11/11.

▲ O., Garfield Heights—SCHOOL—Bd. Educ., 4900 Turney Rd., defeated bonds Mar. 10, school and addns., $2,035,000. Geo. S. Voinovich, 1922 E. 107th St., Cleveland, Zone 6, O., archts. CD 12/1.

▲ Pa., Phila.—CLINIC, etc.—General State Auth., 18th and Herr Sts., Harrisburg, plans by Vincent G. Kling, 917 Corinthian Ave., clinic bldg., education bldg., recreation hall, food service bldg., 12 houses, power plant, Phila. State Hospital, $7,750,000. McCormick-Taylor Assocs., Suburban Station Bldg., consult. engrs. Bids about May 1. CD 12/20/56.

▲† Tex., Dallas—FEDERAL OFFICE, etc.—General Services Admin., F St. between 18th and 19th Sts. N.W., Wash. 25, D. C., and 1114 Commerce St., Dallas, Tex., plans by Geo. L. Dahl, 2101 N. St. Paul St., and Mark Lemmon, 201 Thomas Bldg., assoc. archts., 16 story, 987,000 sq. ft. federal office and courts bldg., $20,000,000. Frank W. Chappell, Burt Bldg., Wm. L. Cobb & Assocs., Interurban Bldg., and Zum-walt & Vinther, Merc. Bldg., consult. engrs. CD 10/22.

▲ Tex., El Paso—HOSPITAL—El Paso County Hospital Dist., Courthouse, 300 bed general county hospital, $5,500,000.

▲ Wash., Mountlake Terrace—SCHOOL—School Dist. No. 15, Edmonds, $900,000 bond election and $200,000 special levy May 5, high school, $1,750,000. R. H. Burkhard, 220 S.W. 192 St., Seattle, archt. CD 10/15/57.

COMMERCIAL BUILDINGS

▲ Calif., Petaluma—APARTMENT—Kaehler Constr. Co., 710 S. Novato Blvd., Novato, 300 unit apartment development, E. Washington and Ellis Sts., $2,500,000.

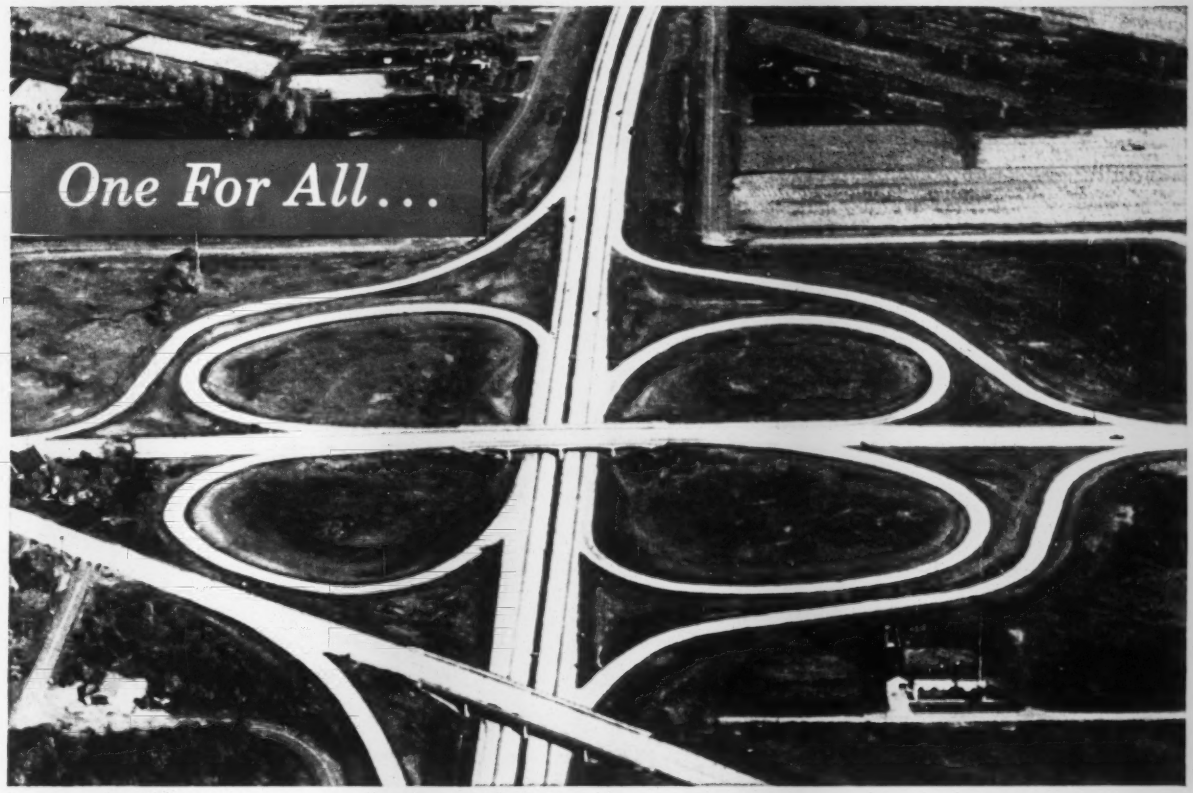
▲ Ga., Chamblee—COLLEGE—Atlanta Baptist Assoc. & Georgia Baptist Convention, 293 Peachtree St. N.E., Atlanta, plans by Logan & Williams, Palmer Bldg., Atlanta, Baptist College, $3,000,000.

▲ Mass., Peabody—MOTEL—Framingham Motor, Inc., Worcester Rd., motel, near Peabody-Lynnfield Line, Approx. $2,000,000. Constr. 1959.

▲ Mich., Holland—DORMITORY—Hope College, women's dormitory, $2,000,000.

▲ Mo., Jennings (St. Louis 21 P.O.)—DEPARTMENT STORE—Stix, Baer & Fuller Co., 601 Washington Ave., St. Louis, Zone 1, plans by Jamieson, Spear, Hammond & Groisick, Arcade Bldg., 812 Olive St., St. Louis, Zone 1, 4 story, 80,000 sq. ft. department store, incl. two commercial bldgs., service station, parking

(Continued on page 76)



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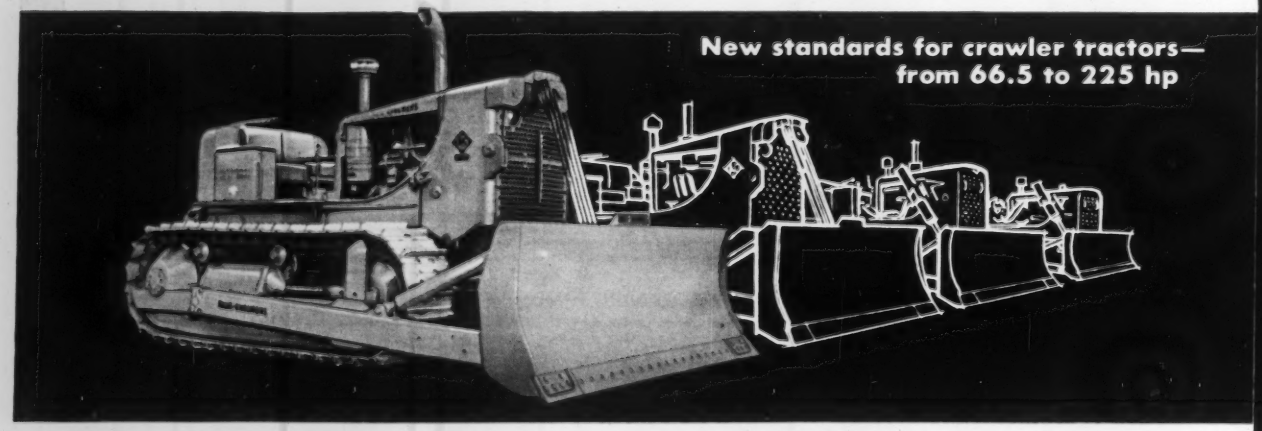

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GURLEY

(Continued from page 72)

areas, 38-acre site, Jennings Station and Hall's Ferry Rds. $5,000,000. Constr. 1960-1961. CD 10/18/55.

▲ Mo., Kansas City—OFFICE—J. C. Nichols, 310 Ward Parkway, Kansas City 12, Mo., plans by Edward W. Tanner & Assocs., 310 Ward Parkway, Kansas City 12, Mo., 9 story, 260,000 sq. ft. concrete block, brick office, incl. 500-car parking, Main St. between 48 Terrace and 49 St., Country Club Plaza area. $2,500,000.

▲ Mo., Kansas City—DENTAL COLLEGE—University of Kansas City, Dental School, 2108 E. 10th St., plans by Neville, Sharp & Simon, 25 E. 12th St., Kansas City, Mo., 4 story, bsmnt., stone, rein.-con. dental college, $2,000,000. CD 10/28/57.

▲ N. J., Morristown—HEADQUARTERS—Jersey Central and New Jersey Power & Light Co., Rte. 53, Denville, plans by Bernard Kelleny, 17 Linden Place, Red Bank, 3 story, 126,650 sq. ft., red brick headquarters, Rte. 24. $3,000,000. CD 4/19/57.

▲ N. Y., Cheektowaga—HOMES—Glen Estates, Inc., 1638 Sycamore St., Buffalo, 350 single family home development, Zoerb and Walden Aves. $5,000,000. Herthe & Sonnenberger, 60 Niagara St., Buffalo, consult. engrs.

▲ O., North Olmsted—APARTMENTS—Great Northern Shopping Center, 26331 Brookpark Rd., plans by Marvin Rukin, 13947 Cedar Rd., Cleveland, Zone 18, 1,500 garden apartments. $15,000,000. Constr. in about 60 days. CD 11/9/55.

▲ O., Shaker Heights—SHAKER HOUSE IMPRVS.—Shaker House Motor Hotels, Inc., 2487 Noble Rd., Cleveland, Zone 21, plans by Joseph A. Gattozzi, 2487 Noble Rd., Cleveland, Zone 21, Shaker House expansion. $4,000,000.

▲ O., Trotwood—SHOPPING CENTER, etc.—Trotwood Commercial Properties, Inc., c/o Rutmann-Copher & Co., and Arthur Beerman & Assocs., 6025 Free Pike, Dayton, shopping center, civic center, business and professional bldgs., stores, etc. (3-4 year program), Free Pike and Olive Rd. $7,500,000. CD 11/25.

▲ Pa., Phila.—APARTMENT—Joseph Lupowitz & Sons, Inc., 7340 York Rd., Melrose Park, plans by George W. Neff, 1520 Locust St., apartment, Bryn Mawr and Wynnefield Aves. $3,000,000.

▲ R. I., Providence—COMPUTER CENTER—Brown University, Prospect St., plans by Philip Johnson Assocs., 375 Park Ave., New York, N. Y., computer center, $3,000,000. Fred S. Dubin Assocs., 178 S. Whitney St., Hartford, Conn., consult. engrs.

▲ Tex., Dallas—HOTEL—Ramada Hotels, 3825 E. Van Buren, Phoenix, Ariz., 3 story, 250-room hotel, Cedar Springs Rd. $2,000,000.

▲ Tex., Houston—SHOPPING CENTER, etc.—Ira L. Berne, Developer-Builder, 11515 Chimney Rock Rd., 250,000 sq. ft. masonry shopping center, $2,750,000; area lighting, $90,000; shopping center area paving and auto. center, $100,000; sanitary-storm lines, $110,000; site earthwork, $65,000, 1700 acre Westbury Addn.

▲ Tex., Houston—SHOPPING CENTER—Frank W. Sharp Constr. Co., Oak Forest State Bank Bldg., shopping center "Sharpstown". $28,000,000. CD 12/11.

▲ Tex., San Antonio—MOTEL, etc.—T. A. Rice & Assocs., Petroleum Bldg., 900 N.E. Military Hy., plans by DeVerne Kittles, 523 W. Hildebrand Ave., 200 unit deluxe motel $2,250,000; office $750,000; 50 lane bowling center, $500,000.

▲ Wis., La Crosse—HOSPITAL—St. Francis Hospital, Winnebago and 10 Sts., plans by Maguolo & Quirk, 1004 Marquette Ave., Minneapolis, Minn., 5 story, L-shape main hospital addn. $3,000,000. Constr., 1960. CD 3/3/58.

▲ Utah, Salt Lake City—SHOPPING CENTER—Petroleum Marketing Properties, 345 S. State St., plans by Snedaker, Budd & Monroe & Assocs., 10 Post Office Pl., shopping center, 5600 S. 9th East and Vine St. $5,000,000.

▲ Va., Alexandria—HOSPITAL—Alexandria Hospital, 709 Duke St., plans by Joseph Saunders & Assocs., 3636 King St., 1st stage, concrete frame, Alexandria Hospital. $3,000,000. Fortune Engineering Assocs., 106 N. Fairfax St., consult. engrs. CD 8/14/56.

▲ Ont., Kitchener—PHYSICS-MATHEMATICS BLDG., etc.—Waterloo University, Kitchener, physics-mathematics bldg., $2,500,000; other bldgs. and addns. Total est. $4,750,000. CD 3/19/57.

INDUSTRIAL BUILDINGS

▲ California—PLANT—Pacific Gas & Electric Co., 245 Market St., San Francisco, plans by Bechtel Corp., 225 Bush St., San Francisco, nuclear power plant, Humboldt Bay, near Eureka. $20,000,000. General Electric Co., River Rd., Schenectady, N. Y., will supply equipment. Constr. 1960. CD 2/25/58.

▲ Fla., Tampa—PLANT—Southern Nitrogen Corp., Hy. 217, Savannah Ga., mfg. plant. $3,000,000.

▲ Mass., East Boston—FUEL OIL TANK FARM—Socony Mobile Oil Co., Inc., 511 Chelsea St., 14 tank 26,732,000 gal. fuel oil tank farm. $2,000,000.

▲ Pa., Morrisville—PLANT—Strick Trailer Co., 5604 N. Broad St., Phila., plant, Falls Twp., 107 acre site. $3,000,000.

UNCLASSIFIED

▲ Calif., San Jose—PARKS—Bd. Supervs. Santa Clara Co., voted $2,817,000 bonds Mar. 10, parks.

▲ Missouri—HOTEL, etc.—Missouri State Park Bd., Jefferson City, hotel and convention center, Table Rock Reservoir, White River. $3,000,000. CD 11/10.

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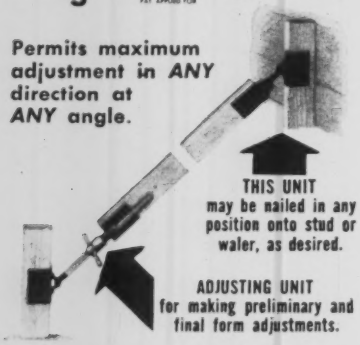

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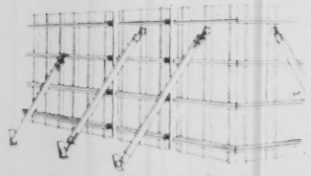

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CONSTRUCTION REPORTS

Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

April 13 Connecticut

STREETS AND ROADS

April 13 Connecticut

HEAVY CONSTRUCTION—LB & CA

▲ MASSACHUSETTS—Commonwealth of Mass., Dpt. P Wks., 100 Nashua St., Boston. Bids opened 3/24. Daniel O'Connell Sons, Inc., 480 Hampden St., Holyoke, Mass., LB $2,083,074, state hy. and bridge Interstate Rte. 91, FA Proj. 1-91-1(5)47, Greenfield and Bernardston. CD 3/3.

BUILDINGS—LB & CA

▲ George A. Fuller Co., 11 Beacon St., Boston, Mass., CA Est. $1,700,000, Loeb Drama CENTER, Harvard Radcliff Theatre, Hilliard & Brattle Sts., CAMBRIDGE, MASS. Harvard College, Bldgs. & Grounds, 16 Dunster St., Cambridge, Mass. Hugh Stubbins & Assoc., 806 Mass. Ave., Cambridge, Mass., archts. CD 2/21/57.

▲ William L. Crow Constr. Co., 201 Park Place, New York, N. Y. and T. deF. Hobbs, 36 Grove St., New Canaan, Conn. CA $2,500,000, 4 DORMITORIES, CLASSROOM BLDG., GYMNASIUM AUDITORIUM and DINING HALL, KENT, CONN. Kent School, Schaghticoke Rd., Kent, Conn. CD 12/19.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

April 8 New Jersey April 23 New York

BUILDINGS—BA

▲ N. Y., New York—HOUSING—BA 4/21—New York City Housing Auth., 299 Broadway, Zone 7, (1) foundations and general constr. (2) heating and ventilating (3) electrical work (4) plumbing at Benjamin Franklin Houses, Proj. No. NYC-27, Section II, E. 108th St., 1st Ave., E. 106th St. and 2d Ave., Manhattan Boro. $20,900,000. Plans deposit $75. CD 8/8/57.

HEAVY CONSTRUCTION—LB & CA

▲ Cayuga Foundation Corp., 30 Vesey St., New York 7, N. Y., LB $5,621,574 (9 bidders) platform extensions to Brooklyn Bridge Station, Lexington Ave., Fourth Ave. Line, Contr. C-128, Manhattan Boro., NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Mar. 20. CD 3/13.

▲ NEW JERSEY—State Hy. Dpt., 1035 Parkway Ave., Trenton. Bids opened 3/24.

Brann & Stuart Co., 336 Whitehead Rd., Trenton, N. J., LB $4,129,086, grading, 8 bridges and paving most of dual roadways on 2.2 mi. Interstate Rte. 295 (FAI-108) extending from Rte. 42 at Browning Rd. in Bellmawr, Camden Co., to Broadway in Westville, Gloucester Co. CD 3/6.

▲ MARYLAND—State Rds. Comm., 108 E. Lexington St., Baltimore, Zone 2.

Prince mont Constr. Co., Rockville, Md., CA $2,074,843, grading, drainage, surf. 2.752 mi. Rte. 193, Chevy Chase to Kensington, M-517-2-320, Montgomery Co. Bids Jan. 20, awarded Jan. 15. CD 1/22, under LB.

BUILDINGS—LB & CA

▲ Geo. F. Driscoll Co. & Moccia Constr. Corp., 41 E. 42nd St., New York 17, N. Y., CA $7,494,571, foundations, general constr. Samuel J. Tilden HOUSES, Proj. No. NY-5-34, in area bounded by Dumont, Stone, Livonia and Rockaway Aves., BROOKLYN, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y. Bids Mar. 19. CD 3/23, under LB.

▲ Double M. Constr. Corp., 1776 Broadway, New York, N. Y., CA $2,062,430, Albert Leonard JUNIOR HIGH SCHOOL, NEW ROCHELLE, N. Y. Bd. Educ., 131 Huguenot St., New Rochelle, N. Y. Eggers & Higgins, 70 United Nations Plaza, New York, N. Y., archts. CD 6/6.

▲ Webb & Knapp Constr. Corp., 386 Madison Ave., New York 17, N. Y., Owner Builds, $22,000,000, Nob Hill Redevelopment Project, two 20-story APARTMENTS, 2-story PROFESSIONAL BLDG., and SHOPPING CENTER, in area bounded by E. 30th St., E. 33rd St., First Ave. and Second Ave., NEW YORK, N. Y. I. M. Pei, 386 Madison Ave., New York, N. Y., archt., S. J. Kessler & Sons, 555 5th Ave., New York 17, N. Y., assoc. archts.

▲ E. H. Keifer & Son, 1321 Rodman St., Phila., Pa., LB $2,612,972, general constr., U. S. Radio Institute, Phila., Pa., University of Pennsylvania, 3025 Walnut St., Phila., Pa. Bids May 5. CD 3/13.

▲ J. G. Kassab, Inc., The Gateway Center, Pittsburgh 22, Pa., CA Est. $3,000,000, design and construct 60,000 sq. ft. basic REFRACTORY PLANT, TARENTUM, PA. A.P. Green Fire Brick Co., Tarentum, Pa.

▲ The Mullan Conta. Co., 3945 Greenmount Ave., Baltimore 18, Md., CA $2,249,800, APARTMENT, Terracedale Court west of Towson College Dr., TOWSON, MD. Greater Towson Development Co., 812 Gilbert Bldg., Baltimore 2, Md.

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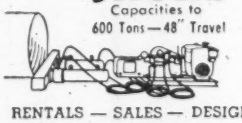

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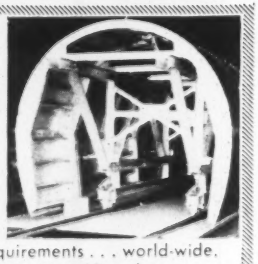

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SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

April 17 Tennessee

STREETS AND ROADS

April 17 Tennessee

BUILDINGS—BA

▲† Fla., Orlando—HOUSING—BA. About 4/28—Base Procurement Officer, Air Force Contracting Office, McCoy Air Force Base, Orlando, 688-unit Capehart Housing, McCoy Air Force Base. $11,000,000. Plans deposit $250. Joseph H. Bryson, 111 W. Adams St., Jacksonville, archt. CD 8/23, under Airports.

HEAVY CONSTRUCTION—LB & CA

▲ Codell Constr. Co., Chattanooga, Tenn., Oman Constr., 1325 Vultee Blvd., Nashville, Tenn., CA Est. $4,000,000, relocation freight yards, freight classification "Hump," passenger station and offices, CHATTANOOGA, TENN., Louisville & Nashville R.R., H. C. Forman, chf. engr., 908 W. Broadway, P.O. Box 1198, Louisville 1, Ky. CD 1/16/57.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

April 14 Wisconsin

STREETS AND ROADS

April 14 Wisconsin

BUILDINGS—BA

▲† Mich., Marquette—HOUSING—BA 4/15—Base Procurement Office, K. I. Sawyer Airport, 360 unit Capehart housing (No. 3), K. I. Sawyer Air Force Base, $5,800,000. Hugh Johnson & Assoc., 2000 "P" St. N.W., Wash., D. C., archts. CD 2/24.

BUILDINGS—LB & CA

▲ F. A. Wilhelm Constr. Co., 3914 Prospect St., Indianapolis, Ind., LB $2,850,000, HIGH SCHOOL, 16 St. and Post Rd., Warren Twp., INDIANAPOLIS, IND. Warren Twp. Marion Co. School Bldg. Corp., Warren Central High School, E. 10 St. and Post Rd., Indianapolis, Ind. Bids Mar. 3. CD 1/29.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

April 7 Iowa — April 8 Arkansas

April 17, 18 Texas

STREETS AND ROADS

April 7 Iowa — April 8 Arkansas

April 17, 18 Texas

HEAVY CONSTRUCTION—LB & CA

▲ TEXAS—State Hy. Comn., Austin. Bids opened 3/20. Tex.—Killion-House Co., 4600 Broadway, San Antonio, Tex., LB $1,427,001, flex. base and H. M. A. C. paving 2.251 mi. Hy. Loop 13 Proj. V. 1025 (13) and V. G. 1075 (16) Bexar Co.;

Tex.—Uvalds Constr. Co., Quipment Office, Hi-Line Dr. and Industrial St., Dallas, Tex., and Joe Davidson, Terrell, Tex., LB $576,459, flex. base, H.M.A.C.P. and concrete paving 3.607 mi. Hy. U. S. 80, Proj. F 130 (12), Kaufman Co.;

Tex.—J. W. Perry & C. H. Allison Constr. Co., Rt. 8, Box 308, San Antonio, Tex., LB $578,703 seal coat 506.393 mi. U. S. 84, etc., Proj. C 52-7-25, etc., Lubbock Co., etc.;

Tex.—H. B. Zachry Co., P. O. Box 10188, San Antonio, Tex., LB $2,666,666, flex. base and H.M.A.C.P. 17.455 mi. Hy. I-10 Proj. I-10-K (12) 32, El Paso Co.;

Tex.—Flenniken Constr. Co., Inc., P. O. Box 6857, Dallas, Tex., LB $1,108,928, fdn., course concrete pavement 2.924 mi. Hy. I-35 Proj. I-35 7(4) 488, Cook Co.;

Tex.—Cooper & Woodruff, P. O. Box 1082, Amarillo, Tex., LB $808,160, flex. base, H.M.A.C. pavement 14.336 mi. Hy. U. S. 287, Proj. F 438(32) and F G 438 (33), Hall Co.;

Tex.—Flenniken Constr. and J. G. Nelson and H. L. Larson, 5603 Maple St., Dallas, Tex., LB $2,099,520, grading, concrete pavement 3.186 mi. Hy. US 75 Proj. F 529 (18) and U 539 (19), Grayson Co.;

Tex.—F. & C. Engineering Co., Box 2426, Houston, Tex., LB $1,238,356 grading, stab. base concrete pavement, etc. 0.986 mi. Hy. I-610 Proj. I-610 7(19) 808, Harris Co.;

Tex.—Reynolds & Huff and R. B. Buttler, Inc., Tyler, Tex., LB $598,934, flex. base and b. conc. 2.347 mi. Hy. St. 31, Proj. U 69 3 (1) and F 693 (2), Smith Co. CD 2/25.

▲ Standard Dredging Corp. of Galveston, 320 Cotton Exchange Bldg., Galveston, Tex., CA $3,000,000, dredging 3600 ft. lin. ft. canal, 36 ft. deep, Neches River, dredging turning basin, Marine Terminal south of BEAUMONT, TEX., Texas Gulf Sulphur Co., 811 Rush Ave., Houston 2, Tex. CD 3/24.

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FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
April 22, 29 California

▲† Oregon—BA 6/2—U. S. Eng., 628 Pittock Block Portland, dam at Cougar Reservoir on South Fork Mckenzie River, approx. 5 mi. east of town of Blue River, Lane Co., CIVENG-35-026-59-170. CD 9/19.

HEAVY CONSTRUCTION—LB & CA

▲ WASHINGTON—State Hy. Comm., Olympia. Bids opened 3/24.

Guy F. Atkinson Co., 10 W. Orange Ave., South San Francisco, Calif., LB $10,969,596 (8 bidders) floating section of second floating bridge across Lake Washington, east of Seattle, King Co. CD 2/13.

▲ WASHINGTON—State Hy. Comm., Olympia.

S. S. Mullin, Inc., 220 River St., Seattle, Wash., LB $2,479,212 (10 bidders) South approach to Lake Washington Ship Canal Bridge on Seattle Freeway, King Co. CD 1/16.

▲† Gordon H. Ball, Inc., 300 Camille Ave., Danville, Calif., CA $3,934,527, 0.6 mi. earth levee imprvs., 0.7 mi. earth channel, 3.9 mi. concrete channel, access ramps, fencing, San Lorenzo Creek Flood Control Proj., ENG-04-0203-59-35, CALIFORNIA. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Mar. 3. CD 3/17, under LB.

▲† Clyde W. Wood & Son, Inc., 6900 Tujunga Ave., North Hollywood, Calif., CA $2,227,438, flood control channel in Santa Ana River Basin, San Bernardino Co. ENG-04-353-59-21, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Feb. 11. CD 2/16, under LB.

BUILDINGS—LB & CA

▲ F. P. Lathrop Constr. Co., 800 University Ave., Berkeley, Calif., LB $2,321,000, Base Bid (10 bidders) 156,300 sq. ft., wood frame, steel Mount Eden HIGH SCHOOL, Panama St., HAYWARD, CALIF., Hayward Union High School Dist., 2300 Foothill Blvd., Hayward, Calif. CD 2/20/56.

▲† Sun Gold, Inc., (American Pipe & Constr. Co. and L. E. Dixon Co.), 3631 10 St., Riverside, Calif. LB $13,675,000 (17 bidders) 947 unit Capehart HOUSING, SAN DIEGO, CALIF. Dist. P. Wks. Office, 7th Naval Dist., 1220 Pacific Highway, San Diego 30, Calif. Bids Mar. 24. CD 3/12.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
April 29 Ontario

BUILDINGS—BA

▲ Alta., Calgary—COURT HOUSE, etc.—BA 4/9—Alberta Dpt. P. Wks., Parliament Bldgs., Edmonton, supply and erect structural steel and rein.-con. for Court House and Land Title Bldg., with provision for 4 story addn. Total est. $5,000,000. Plans deposit $20. CD 9/4.

BUILDINGS—SLC

▲ Ont., Toronto—BREWERY—Carling Breweries Ltd., 247 Davenport Rd., soon lets contract poured concrete fdns. for brewery west of junction of Hy. 401 and 27. Total est. $7,000,000-$8,000,000. CD 6/10/57.

BUILDINGS—LB & CA

▲ Foundation Co. of Canada Ltd., Bd. of Trade Bldg., 630 St. Sacrament St., Montreal, Que., CA. Total est. $5,000,000, GRAIN ELEVATOR, concrete silos, storage fdns., concrete dock work, BAIE COMEAU, QUE. Cargill Grain Co., Ltd., 1400 Sherburne St., W., Montreal, Que. Bids Mar. 6, awarded Mar. 20. CD 3/3.

PUERTO RICO

HEAVY CONSTRUCTION—LB & CA

▲† Five Boro Constr. Co., 2 LaFayette St., New York, LB $2,437,543, technical bldgs. and power plants for communications relay center, ENG-08-123-59-33, CAMP LOSEY and SALINAS, PUERTO RICO. U. S. Eng., P. O. Box 4970, Jacksonville 1, Fla. Bids Mar. 17. CD 2/12.

U. S. POSSESSIONS

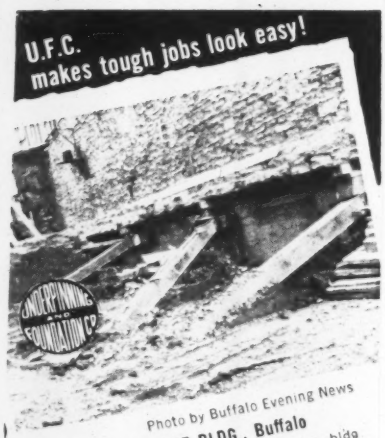
BUILDINGS—LB & CA

▲† Hawaiian Dredging & Constr. Co., Ltd., and Pomeroy & Koster, Honolulu, Hawaii, LB $4,176,000 (5 bidders). Base Bid 220 units Capehart HOUSING, GUAM. Commander Naval Forces, Marianas, 14th Naval Dist., Navy 128, San Francisco, Calif. Bids Mar. 16. CD 5/10.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ Egypt, Alexandria—DRYDOCK—BA 8/22—Ministry of War, United Arab Republic, Director General, Garden City, Cairo, drydock, $7,000,000. Extended late. CD 12/5.



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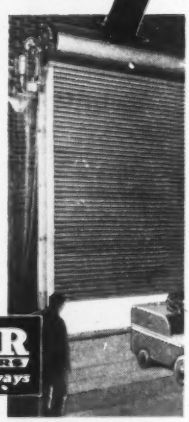

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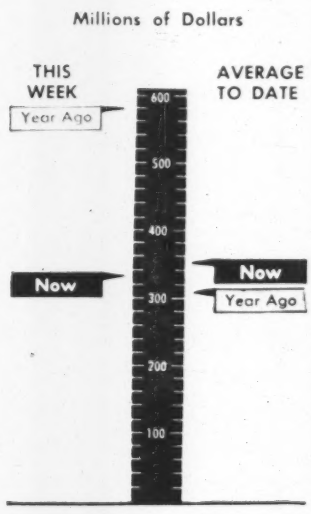
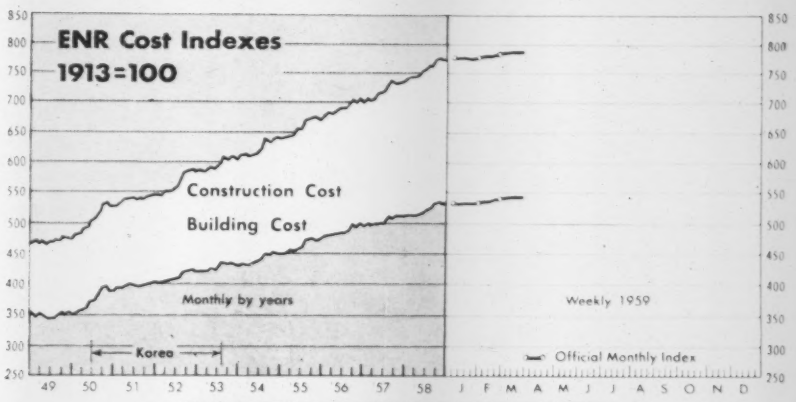
Construction Scoreboard

CONTRACTS ...





CURRENT COST INDEXES

ENR INDEXES (1913=100), 20-cities' average	Week of Mar. 26 1959	% Change from Feb. 26 1959	% Change from Mar. 27 1958
Construction Cost	783.68	+0.3	+5.3
Building Cost	542.65	+0.4	+5.2

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850. 1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 14 wks 1959	Chge '58-'59 %
	millions		
ALL Heavy Constr.	$338.3	$4,938.2	+11
PRIVATE	121.6	2,394.7	+12
PUBLIC	216.7	2,543.5	+11
State & Municipal	144.5	1,817.6	0
Federal	72.2	725.9	+51
By Type of Work			
PUBLIC			
Waterworks	3.4	115.8	+82
Sewerage	6.7	147.4	— 3
Bridges*	9.7	161.7	+35
Highways	85.5	706.4	+ 3
Earthwork, Waterways	15.8	190.1	+12
Buildings, Excl. Housing	65.2	680.3	+ 9
Housing	9.4	145.4	—52
Unclassified	21.0	396.4	+125
PRIVATE			
Buildings			
Mass Housing	52.1	986.7	+ 3
Commercial	42.4	568.6	+15
Industrial	17.6	724.2	+28
Unclassified	9.5	115.2	— 5

*Includes private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

CAPITAL . . .

New Capital For Construction	Week of millions Mar. 26	Cum. 13 wks 1959	Chge '58-'59 %
Corporate Securities	$ 65.2	$ 838.6	—43
State and Municipal:			
All Except Housing	108.4	1,614.3	—13
Housing	2.8	30.6	+51
Federal Loans	7.4	28.5	—49
Federal Aid	....	....	....
Total Nonfederal	$183.7	$2,512.0	—26
Federal Appropriations:			
Projects in U. S.	....	....	—100
Out-side U. S.	....	....	....
Total New Capital	$183.7	$2,513.0	—36

STATE AND MUNICIPAL BOND SALES

	1959 Mar.	1959 3-Mos.	Percent Change from 1958 Mar.	Percent Change from 1958 3-Mos.
	(millions)			
All Construction	$564.6	$1,644.8	— 7.5	—12.3
Buildings	274.3	650.0	— 10.2	—10.3
Schools	149.2	387.3	— 34.9	—17.8
Housing	29.3	30.6	+ 51.0	+50.2
Other buildings	95.8	232.1	+ 68.5	— 0.3
Heavy Construction	290.3	994.8	— 4.9	—13.5
Waterworks	69.7	165.3	+ 99.5	+24.3
Sewerage	49.6	8.2	+ 7.6	+ 4.7
Bridges	6.4	118.4	+117.5	+98.2
Highway	46.7	121.6	+ 59.2	—59.5
Earthwork, dams, waterways	21.6	264.4	+2,498.3	—24.9
Unclassified	96.3	316.9	— 9.2	+27.8
Electric and gas utilities	2.1	29.4	— 95.3	—42.0
Airports	21.9	146.7	+403.9	+308.3
Parking facilities		6.0	—100.0	+41.2
Other	72.3	134.8	+ 35.0	—14.2

CONSTRUCTION MACHINERY PRICE INDEXES

Manufacturers Prices, 1947-49=100—BLS	Feb. 1959	Percent Change from last Month	Year
All Types	171.3	+0.2	+ 3.4
Cranes, Draglines, Shovels	168.6	+0.2	+ 3.4
Shovel, ¾ cu yd	173.3	0	+ 3.5
Shovel, 1—1½ cu yd	183.7	0	+ 5.4
Shovel, 2—2½ cu yd	158.8	0	+ 2.8
Crane, truck mounted	169.4	+0.2	+ 3.2
Scrapers and Graders	163.8	0	+ 3.2
Scraper, 4 Wheel, 12-15 cu yd	156.8	0	+ 3.1
Grader, heavy duty	171.1	0	+ 4.3
Tractors (non-farm; incl. industrial)	187.8	+0.4	+ 3.8
Wheel-type, off-highway (January 1955=100)	128.2	0	— 0.2
Crawler type, 80-120 dhp	191.3	0	+ 2.5
Machinery, Tractor Mounted	168.6	+0.1	+ 4.3
Dozer, hydraulic control	186.6	0	+ 5.2
Loader, shovel type	161.5	+0.3	+ 4.9
Specialized Machinery	153.2	0	+ 2.0
Ditcher	156.6	0	+ 1.6
Roller, tandem	198.6	0	+ 2.8
Roller, 3 wheels	170.2	0	+ 5.3
Portable Air Compressors	159.5	0	+ 0.3
Contractors Air Tools	181.6	0	+10.5
Mixers, Pavers, Spreaders	155.4	0	+ 4.1
Mixer, truck, 6 cu yd	131.1	0	+ 2.3
Mixer, paving, 34 cu ft	189.2	0	+ 2.2
Bituminous paver	155.8	0	+ 1.8

Growing Construction Market:

Building Parking Space for Boats

Last weekend a cabin cruiser nosed its way up the Connecticut River. Near Hartford, the owner reduced the craft's speed, steered into a well-concealed cove and cast a mooring line across the tree trunks overhanging the water.

He was one of 1.2 million boat owners who will be turned away from the nation's overcrowded marinas this year.

Marina construction is a multibillion-dollar market that's coming to life fast. What's more, a concerted drive to meet the demand would not reduce the construction potential. Another two million families would buy boats if they knew adequate berthing facilities were available, says the National Association of Engine and Boat Manufacturers, Inc.

More than $3 billion worth of new marina facilities are now required. This includes outlays for boat servicing, docking and storage facilities only. To this can be added unestimated millions for such things as "hotels," stores, restaurants and recreation areas.

Existing marina facilities themselves are a good market. About 80% of them need modernization. "Only 2,100 of the nation's 10,000 marinas provide adequate berthing and servicing facilities," says Charles A. Chaney, head of C. A. Chaney and Associates, Bethesda, Md., consulting engineering firm. His firm is the only one known to specialize in marina design and planning.

Mr. Chaney says the marina shortage is the result of two causes:

• Explosive growth of boating as a popular sport.

• Difficulty in arranging financing.

The engine and boat manufacturers group says the number of pleasure craft on U. S. waterways more than tripled from 1947 to 1958—up from 2.4 million to 7.3 million. In the same period money spent on boating rose from $905 million to $2.1 billion, that's more than is spent on baseball, golf or fishing. The money bought boats, engines, accessories, safety equipment, fuel, insurance, maintenance and storage.

Although the sport of boating apparently is here to stay, there are some risks involved in financing marinas. Marinas serve a need that is seasonal and recreational. The shorter the season, the greater the risk. Boating seasons range from two or three months in New England and the Northwest, to almost a full year in such areas as Florida and Southern California. Wind and flood-tide conditions add to the hazards.

But worst of all, the marina facilities themselves many times are unable to pay off maintenance and operation costs.

The amount of risk capital needed is large. It costs a minimum of $600 to $700 a berth for a small craft, and up to $2,000 each for larger cabin-type cruisers, according to Mr. Chaney's estimates. And these unit figures range upward, depending upon the type of basic facility and supporting accommodations provided. For this reason, overall outlays can range from $30,000 for the 30-boat marina at Carolina Beach, N. C., to the $20-million Bahia Mar installation at Fort Lauderdale, Fla.

Few investors have been willing to put this kind of money on the line for such a long-shot venture. However, the financial climate appears to be shifting, but not because boat services can pay their way. It's now recognized that boat-owners want and are willing to pay for other things besides mooring, fuel and repairs. They buy food, various types of merchandise and many times rent overnight or weekly living accommodations. For this reason, marinas as an investment are becoming a more conventional type of commercial venture.

The more varied the supplementary facilities and the more widespread the types of services, the more profitable is a marina. A well-managed marina with extensive commercial facilities can return as much as 10% on investment, compared to a return of 1% to 2% on a basic marina.

With the non-boating commercial facilities now being acknowledged as the profitable adjuncts to marinas, communities and states are planning to provide small-boat installations. Most of the nation's 10,000 marinas were developed privately by syndicates or a small group of boat-owners acting to meet their own needs. Now it appears that the prime moving force will be the community, with private individuals entering the picture later as lessees of shopping centers, hotels, and other units grouped around the waterside installation.

Cities in Florida perhaps typify the direction and method by which locali-

ties will provide marinas. West Palm Beach is moving ahead with a $7.5-million installation that will include several commercial facilities in addition to boating services. These will be leased to a Chicago real estate man for $475,000 a year.

And Panama City sold $7 million in revenue bonds to finance construction of two marinas. Revenues derived from all the facilities are expected to be sufficient to pay off the debt. However, to make the investment more attractive, the city has also pledged its cigarette and utility taxes to the bonds if marina earnings don't cover debt service.

California communities have been extremely active in the development of private boating facilities. Now the state itself is moving into the operation.

In 1957 the legislature authorized establishment of a $10-million revolving fund to be used by communities for preliminary planning, engineering and construction of marinas. Ventura was first to receive a loan from this source—$900,000 for land acquisition for a $9-million facility. Since then 19 other localities have received loans and eight more are scheduled to receive funds shortly. The loans will lead to eventual construction totaling $33 million.

California officials are hoping to move ahead with a $60-million state program over the next 20 years to provide small craft harbors every 30 miles along the 1,100-mile coast.

Meanwhile, the localities are moving ahead on their own. Between San Rafael and San Diego, 78 municipal marinas are being planned. Also, Mission Bay is planning a $25-million installation; Redondo Beach has authorized $9 million for harbor projects.

It's possible the federal government might get into the act. Rep. George Fallon (D., Md.) is sponsoring a bill to provide insurance on mortgages used to construct and expand private marinas. It stands no chance of obtaining even a hearing this year, but it may be a straw in the wind. Under his plan, the Community Facilities Administration of the Housing and Home Finance Agency would insure up to 90% of a loan for marina construction.

To some extent the federal government is in the marina business right now. The Corps of Engineers will dredge and provide harbor protection if an installation can qualify as a "harbor of safe refuge" or if improvements are "an aid to navigation." A locality must also give assurance that money is available to pay for a complete harbor operation after the Corps completes its phase.

Any bill of the type sponsored by Representative Fallon could have its most immediate effect on existing marinas requiring improvement. Mr. Chaney says many such installations were built haphazardly with little or no planning. Some were built of untreated wood. In such cases, the structures extending into the water are sagging, verging on failure. A measure such as the Fallon bill could provide comparatively rapid salvation for such installations.

However, it would do nothing for units similar to one built in a southern resort community. According to Mr. Chaney its owners used untreated wood. The facility paid for itself in two years, but collapsed in three.

Why the Marina Market Looks Good

- **There aren't enough of them:** More than a million boat owners will be turned away from overcrowded marinas this year.
- **Existing marinas aren't good enough:** Some 80% of them need modernization and addition of auxiliary services—hotels, restaurants and stores.
- **Investors are becoming more interested:** Profits from the auxiliary services are making the necessarily big outlays a better risk.
- **City and state governments are getting in the act:** Marinas are an added lure for water-borne tourists.

It all adds up to one more big market for construction.

Contractor Failures Set Record

There's a silver lining in the otherwise ominous record of contractor failures in 1958.

Although the total number of firms going bankrupt increased to a record high, nearly all of the rise came during the first seven months. The record since last July is more encouraging.

From August through December '58, contractor failures averaged 170 per month. That's 10% under the high for January through July, according to Dun & Bradstreet figures. Moreover, it was 3% below August-December '57.

In January of this year, failures rose slightly, to 188. In February the number dropped to 164, compared to 177 in February '58. This represents the first drop between January and February since 1951 and the lowest February total since 1956. The 352 total for January and February is one less than the same two months in 1958.

Reports for the first three weeks of March indicate it will be up slightly from February, but lower than March '58.

General contractors had the fewest failures with 51 in February, lowest for any month since July '57. So far in 1959, 111 general contractors have failed, 26% fewer than a year ago.

Building subcontractors are having more trouble. In February, 96 failed—the same number as a year ago. But the January and February total, 210 failures, is a new record.

Other contractors, particularly those in heavy engineering work, are setting new highs in failures. February's 17 is the highest since World War II and brings the first two months to 31. This is 55% above a year ago, and a new record.

Roadbuilding Schedules Tightened in Florida

Florida's Road Department is aiming to accelerate the progress of highway work under construction.

The move is an aftermath of complaints from business establishments dependent on motorists for income. They say that the slow progress of work in front of such operations practically eliminates business during prolonged periods of construction.

The Road Department therefore instituted changes in contract procedures. It will let contracts sooner after bids are opened, but the successful bidders will have to meet tighter schedules.

Instead of basing work progress on work-day basis, job schedules will go on a calendar day basis. However, under the new system a contractor will be granted a specific extension of time to complete a job if weather conditions hold up work.

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The new Mark Twain Expressway, sweeping into St. Louis from rapidly-expanding northwest suburbs, will relieve a troublesome traffic-congestion problem. As it nears the downtown district, this modern freeway will be elevated for approximately one-half mile, spanning some of the city's most heavily traveled streets.

In this overpass alone, more than 700 tons of Laclede reinforcing steels have been used. And in many other highway projects throughout the midwest, Laclede steels are imparting the strength and durability needed to carry today's high-speed, high-volume traffic.

General Contractor: Mary Construction Co., Cape Girardeau, Mo.

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Jobless Benefits Plague Congress

- **The temporary unemployment compensation law passed by Congress doesn't tackle the big problem: Adequacy of state benefits.**
- **Next week Congress will consider bills to force state improvement, but the prospects for action are not too good.**

Congress passed and sent to the President last week a measure extending in a limited way the temporary federal unemployment compensation law. But this action barely scratches the surface of the unemployment problems that lie ahead.

Next week Congress will tackle the big job of liberalizing and modernizing the whole jobless benefit system. Chances for success don't seem too good.

Congress will run into bitter controversy over two questions:

- Should anything be done at all?
- Should the federal government be muscling in on the problems of the states?

There's more at stake than the plight of the unemployed. The tax burdens of employers and the welfare of local economies also come into the picture.

Last week's action merely provides for a slower death of the federal law that has allowed idle workers to draw unemployment benefits for a period half again as long as the regular period set by their state laws. The old law, due to expire this week, will be extended to July 1. It applies only in the 17 states that have subscribed to it, does not increase the size of benefits and will not help those who exhaust their state benefits after this month.

Instead of this piecemeal effort to cope with a chronic problem, what appears to be a sizable majority of Congress is urging some form of permanent improvement of the system. The move is backed by the Administration and organized labor.

• The proposals—Among the plans to be suggested next week in the House Ways and Means Committee are these key proposals:

- A bill backed by Sen. John F. Kennedy (D., Mass) and several fellow Democrats calling for federal standards setting minimum jobless benefits at half a workers' take-home pay for at least 26 weeks.
- An Administration proposal that would add some 3.2 million workers—in the smallest shops and in nonprofit organizations—to the current law. State compensation now covers 40 million out of a potential 76 million workers. The Administration also would hike the tax base for employers to $4,700.

The Kennedy forces and the White House are in agreement on the level of benefits and the duration. But they would take different routes. President Eisenhower wants the states to hike the benefits themselves.

Even with political sentiment generally favoring higher employment compensation levels, chances of Congressional action are slim for several reasons. While unemployment has hung on at abnormally high levels—over 4.5 million at last count—the Administration is predicting a drop to around three million by October.

This decline in unemployment, partly seasonal, should take the pressure off Congressional action this session. Most unemployment is massed in the industrial states—Michigan, Pennsylvania, Ohio and the like. This centralization, combined with prospects for easing the jobless count, diminishes the campaign.

Also, the states-rights controversy hangs in the middle of this, as in many political issues, and the spottiness of the unemployment pattern makes it difficult to amass sufficient state support for such federal rules.

• The state approach—The nine-member Governors' Executive Committee recently appeared at the White House for a verbal admonition from President Eisenhower on jobless benefits. He called for the 47 state legislatures meeting this year to vote the increase.

Most states have been reluctant to follow the President's suggestions on benefits in the past. A Labor Department tabulation of state actions since 1954—on the duration of benefits—shows: 22 states, no progress; 14, slight progress; and 11, substantial progress.

On the maximum weekly payments, most states show some improvement in benefits, but only six are now at the 50% of take-home pay, as the President would like.

The renewed request by the White House for state action is a setback to Congressional prospects for raising the state standards by federal law. It is also a blow to Labor Secretary James P. Mitchell, who had advocated such a course in Cabinet meetings. The decision has evoked a sharp rejoinder from labor. The AFL-CIO has long been pushing for minimum and compulsory standards set by federal law. It thinks the states will never solve the problem.

• For higher benefits—Advocates of higher benefits, and this includes a majority of Mr. Mitchell's tripartite Advisory Committee on Unemployment Compensation, generally favor the 50% benefit, 26-week minimums. To achieve this, the maximum level is set at two-thirds of the state's average weekly wage.

A combination of labor and public members on the Advisory Committee proposed this level to the Labor Secretary, to be met in two steps: 50% for two years to be raised to 60% during the next two years. At the same time, in states not complying with federal minimum the employers would not be permitted their present credit of 90% toward the existing 3% payroll tax.

The states now allow tax relief to those employers with good employment records so that the average national payroll tax is 1.2%, rather than the 2.7%. Employer members of the Advisory Committee objected to the federal minimums in principle as "involving the government very deeply in state affairs"—and in particular to the higher payroll taxes required.

Mr. Mitchell's legislative proposal to increase the tax base on unemployment compensation doesn't sit well with business groups either.

(*Labor continued on p. 86*)

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Laborers Offer to Freeze Wages

Two building laborers local unions in Illinois have volunteered to freeze their wages and fringe benefits for the current year.

The action was taken by Locals 398 and 100 in Granite City and East St. Louis to "help stimulate construction activity and the economy in the area." Some 2,000 laborers, normally employed at peak periods, will be affected. Their hourly scale remains at $3.15.

The decision represents adoption of a proposal advanced by the Southern Illinois Builders Association (AGC). Labor leaders in other local unions, however, indicate they do not view the wage freeze offer with favor and are not apt to subscribe to it.

The employers had also suggested elimination of contract provisions that "may prevent maximum production." The unions' reply to this is that the matter is covered by these three clauses in their present contracts:

- The employer has the right to determine the number of men required on any project.
- There shall be no limitation on the amount of work a man shall perform during the working day.
- There shall be no restrictions on the use of machinery or tools.

Current contracts, which expire August 1, contain an automatic renewal clause. The wage freeze offer remains effective only if the contracts are renewed automatically. In the event the employers desire to open the agreements, the unions say, the offer "shall be null and void."

Brown-Olds Used on Seaway Work

Two Morrison-Knudsen joint ventures working on the St. Lawrence Seaway must "reimburse all present and former employees who have unlawfully been required to pay a work permit fee, initiation fees and other monies" to Local 545 of the operating engineers.

The order came from a three-member panel of the National Labor Relations Board. It is another application of the Brown-Olds remedy in cases of unlawful hiring procedures in the construction industry. The remedy is the NLRB's big weapon in compelling recognition of the fact that a worker need not be a union member to get a job.

The action stemmed from an unfair labor practice charge filed by an individual who claimed that hiring priority was given to members of the local union and that he had to pay the union a weekly permit fee of $2.50 after getting a job referral from it.

The fact that the union had avoided the Brown-Olds remedy because of a settlement stipulation concluded during the board's Mountain Pacific-Brown Olds moratorium last year is not sufficient reason to omit the remedy against the contractors now, the NLRB said.

The joint ventures are Morrison-Knudsen Co., Inc., Walsh Construction Co. and Perini-Quebec, Inc., (doing business as Robinson Bay Lock Constructors); and Morrison-Knudsen Co., Inc., B. Perini Sons, Inc., Walsh Construction Co. and Utah Construction, a joint venture.

Rothman Nominated for NLRB Post

Stuart Rothman, solicitor of the U.S. Department of Labor, has been nominated by President Eisenhower to succeed Jerome D. Fenton as National Labor Relations Board General Counsel.

The general counsel holds an autonomous office within the framework of the NLRB and plays a key role in labor-management affairs. He exercises ultimate authority in the issuance of unfair labor practice complaints and his decisions are not reviewable.

Mr. Rothman is a St. Paul native who turns 45 this month. He has been chief counsel in the Labor Department since 1953. His NLRB nomination was recommended by Labor Secretary James P. Mitchell. Sen. Barry Goldwater (R., Ariz.) opposes the nomination.

Mr. Fenton has been a significant figure in the present clean up of construction hiring practices. He tendered his resignation earlier this month.

Prevailing Wage Proposal Is Defeated in Colorado

The Colorado Senate has rejected a labor-sponsored bill calling for payment of prevailing wages on all construction work contracted by the state.

Six Democrats from farming communities teamed with the solid Republican minority to defeat the measure 18 to 15.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: April 23, 1959.

New York State Road Work

NOTICE TO CONTRACTORS. STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 23rd day of April 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Nickerson, District Engineer, 333 Broadway, Albany 1, New York						
Essex (Rte. 22)	R.C. 59-40	Ticonderoga-Montcalm Landing S.H. 8073	1.19	Asphalt Concrete Pavement	$3,000 Plans $5	$51,000
DISTRICT No. 2, Lacy Ketchum, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Madison & Oneida (Rte. 31)	FARC 59-33	Oneida-South Bay, Pt. 2, S.H. 1361 Canastota-South Bay, S.H. 812 Oneida Valley-State Bridge, Pt. 1 and Pt. 2, S.H. 8367 State Bridge-Verona Station, S.H. 8432 Project F-540-2	7.12	Asph. Conc. Type 1A Pavt. Prestressed Conc. Beam Bridge 3 Span 178.5'	$87,000 Plans $5	1,214,000
Oneida (Rte. 12)	FARC 59-12	Boonville Town Line-Mt. Keever, S.H. 5248 Alder Creek-Lewis County Line, S.H. 5307 Boonville-Port Leyden, Pts. 1 & 2, S.H. 8472 Project F-1137-1	9.39	Asph. Conc. Pavt. = 9.33 Miles, Misc. Work = 0.06 Mi. Widen Exist Br. 28' SP. I-Beam	$87,000 Plans $5	1,586,000
DISTRICT No. 3, Earle E. Towlson, District Engineer, 333 E. Washington Street, Syracuse, New York						
Cayuga (Rte. 31B)	FARC 59-28	Woodsport-I Bridge, S.H. 9075 Project F-531-1	0.38	Asph. Conc. Type 1A Pavt. = 0.36 Miles, Misc. Work = 0.02 Mi., Pres. Conc. Beam Bridge 60' Span	$9,500 Plans $5	163,000
Cortland (Rte. 41)	FARC 59-20	Homer Village, Clinton Street, S.H. 1606 Project C-215-3	0.26	Asph. Conc. Type 1A Paving, Pres. Conc. Beam Bridge 41.5'	$9,000 Plans $5	160,000
Tompkins (Rte. 96B)	FARC 59-18	Ithaca-Danby, Pt. 3, S.H. 5213 Project F-539-1	1.34	Asph. Conc. Type 1A Pavement	$46,000 Plans $5	840,000
DISTRICT No. 5, E. G. H. Youngman, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Cattaraugus & Erie	FASS 59-10	Gowanda Village, Aldrich Street, Pts. 1 and 2 Project S-444-1	1.37	Asph. Conc. Pavt. = 1.35 Mi., Misc. Work = 0.02 Mi.; Comp. I-Beam Cont. Susp. Br. 3 Span 316'	$10,000 Plans $5	733,000
Chautauqua (Rte. 5)	FARC 59-30	Silver Creek Connection, S.H. 52-1 (Howard St. Bridge) Project F-458-12	0.08	Asph. Conc. = 0.04 Mi., Misc. Work = 0.04 Mi.; Pres. Conc. Beam Br. 2 Span 101'	$7,000 Plans $5	125,000
Chautauqua	FASS 59-11	Frewsburg-Clarks Corners Cir. Rd. No. 60 Project S-469-2	0.77	Bit. Double Surf. Treat Pavt. = 0.74 Mi., Misc. Work = 0.04 Mi., Pres. Conc. Beam Bridge 42 ft.	$11,000 Plans $5	203,000
Erie (Rte. 20)	FARC 59-27	Transit Road, Pts. 1 & 3, S.H. 9217 Project F-1079-8	0.20	Asph. Conc. Type 2A Pavt. = 0.13 Mi., Misc. Work = 0.07 Mi., Pres. Conc. Beam Br. 2 Span 120'	$7,000 Plans $5	130,000
Erie (Rte. 5)	R.C. 59-31	Athol Springs-Walden Cliffs, S.H. 5407	3.53	Asph. Conc. Pavt.	$20,000 Plans $5	363,000
Niagara (Rte. 18)	R.C. 59-32	Youngstown-Olcott, Pt. 1 and Pt. 2 S.H. 8206A-8324	3.32	Asph. Conc. Pavt.	$15,000 Plans $5	261,000
DISTRICT No. 6, James H. Thomas, District Engineer, State Office Bldg., 50 West Main Street, Hornell, New York						
Chemung (Rte. 13)	FASH 59-7 FARC 59-29	Horseheads-Cayuta, Pt. 1 Horseheads-Cayuta, S.H. 5432A Project F-560-7	3.29 1.52 Acft.	Asph. Conc. Pavt. = 3.29 Mi., Access = 0.63 Mi. Asph. Conc. Pavt. and 0.89 Mi. Cem. Conc. Pavt.; 3 Comp. W.F. Beam Brs. 1 Span 247.5', 2 Span 137' and 2 Span 134', Widen Exist. 42' Sp. R.C. Closed Box Br.	$105,000 Plans $5	1,891,000
DISTRICT No. 9, Joseph C. Frederick, District Engineer, 71 Frederick Street, Binghamton, New York						
Chenango (Rte. 12)	FARC 59-24	Greene-Oxford, Pt. 2, S.H. 8002 Norwich-Oxford, S.H. 5414 Project F-87-4	5.25	9" Cem. Conc. Pavt. 24' Wide = 1.52 Mi.; Asph. Conc. Pavt. = 0.42 Mi., Misc. Work = 0.01 Mi., Pres. Conc. Beam Br. 1 Span 70', Widen Exist. I-Beam Br. 42' Span	$90,000 Plans $5	1,638,000
Sullivan (Rtes. 17 & 42)	FATS 59-5	Bloomingburg-Monticello, Pt. 2, S.H. 5457, 5457A Monticello Village Broadway and Jefferson Sts., S.H. 5490 Monticello-Liberty, Pt. 1, S.H. 5063 Monticello-Woodbourne, Pt. 1, S.H. 8153 Project F-365-14	6.65	Traffic Signs & Delineators	$8,000 Plans $5	149,000
DISTRICT No. 10, M. J. Goltz, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Bronx (Int. Tour. Rte. 495)	FICBE 59-2P FITNE 59-1P	Interstate Route Connection 513, Cont. 3 (Cross Bronx Expressway and Throgs Neck Expressway) Project I-1112-12	2.71 5.03 Acft.	9" Cem. Conc. Pavt. with Carb. Black 2.6% 36' Var. Wide = 2.53 Mi., Misc. Work = 0.18 Mi., Asc. = 1.55 Mi. Asph. Conc. and 0.49 Mi. Cem. Conc. Pavt.; 6 Hy. Sep. Conc. Steel Girder, 4 Sp. 225', 3 Sp. 114.2', 2 Sp. 417.5', 3 Sp. 168.8', 2 Span 166' and 2 Span 170'	$100,000 Plans $10	2,041,000
Suffolk (Rte. 27A)	FARC 59-26	Amityville-Babylon, S.H. 693 Project F-874-5	0.32	Asph. Conc. Pavt. = 0.12 Mi., Drain. & Misc. Work = 0.20 Mi.	$7,000 Plans $5	131,000

Any projects in this letting that are on the Federal Aid highway system are subject to the provisions of the "Federal Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wages), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City. The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set in good condition, within 30 days of award, or rejection of bids. A refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

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SUPT. OF PUBLIC WORKS

Read the Official Proposal Columns of

ENGINEERING NEWS-RECORD

This Week and Every Week

OFFICIAL PROPOSALS

Bids: June 10, 1959.

Republic of Iraq Development Board & Ministry of Development Technical Section 2.

BAGHDAD-KIRKUK ROAD
SECTION NO. (1) CONTRACT NO. R/7-B (1958): TUZ KHURMATU-ADHAIM.
LENGTH 70 Km.
SECTION NO. (2) CONTRACT NO. R/7-C (1958): ADHAIM-BAQUBA.
LENGTH 70 Km.

The Development Board & Ministry of Development invite Tenders from experienced Highway Engineering Firms & Contractors, who have carried out works of similar quality and quantity, for the construction of the Baghdad-Kirkuk Road from Tuz to Baquba, under two contracts of approximately (70) kms. in length each. The works will consist of pavement construction by asphaltic concrete on crushed stone or graded gravel foundations, culverts, bridges and all other incidental work which may be required.

The tender documents may be inspected at the following places:—

1. The Offices of the Ministry of Development, Baghdad.
2. The Embassies of the Republic of Iraq in Washington, London, Bonn and Moscow.
3. The Embassies of United Arab Republic in Prague, Tokyo & Belgrade.
4. The Legations of the Republic of Iraq in Brussel, Rome & Vienna.
5. The Offices of Messrs. Ingenieurburo Intercontinental (Dorsch-Gehrmann, Wagner), 149, Alwiyah, in Baghdad or in Wiesbaden, Wilhelmstrasse 14, West Germany.

A complete set of each contract's documents may be obtained on or after Feb. 25th from the D. G. Legal Affairs & Contracts, Ministry of Development, on payment of ID.40 — (Iraqi Dinars Forty) for each set or its equivalent, which is not returnable.

Each tender shall be accompanied by a preliminary deposit of ID. 30,000/— (Thirty Thousand Iraqi Dinars), which must be either paid in cash to the D. G. Accounts, Ministry of Development and the receipt for such payment attached to the Tenders, or by a letter of guarantee from an approved Bank in Iraq.

Contractors may tender for one or both Contracts separately in which latter case the time for completion specified in each Contract shall not be accumulated.

Tenders must be submitted separately for each Contract, in the English Language, to the D. G. Legal Affairs & Contracts, Ministry of Development, Southgate, Baghdad in sealed envelopes each marked "Tender for construction of Baghdad-Kirkuk Road, Section No. (1) Contract R/7-B (1958), Tuz Khurmatu-Adhaim" and "Section No. (2) Contract R/7-C (1958), Adhaim-Baquba" respectively, on or before 12 noon local time on June 10, 1959.

Tenders not submitted within the time specified, or not accompanied by a receipt of the cash deposit or letter of guarantee and the certificate of membership of a Chamber of Commerce (if the Tenderer resides in a Liwa in Iraq where a Chamber of Commerce exists) will not be considered.

The Board does not bind itself to accept the lowest or any Tender.

Ali Shehan
Minister of Development

Bids: May 8, 1959.

North Buffalo Creek Sewage Treatment Plant Additions City of Greensboro, North Carolina

Sealed proposals will be received by the City of Greensboro, North Carolina, until 10 a.m., E.S.T., May 8, 1959, and then publicly opened and read, for the construction of sewage treatment plant additions. The work will be divided into five (5) contracts, as follows:

Contract I —General
Contract II —Electrical
Contract III —Plumbing
Contract IV —Heating and Ventilating
Contract V —Air Conditioning

Proposals must be enclosed in a sealed envelope addressed to the Mayor and City Council, City of Greensboro, N. C., and the outside of the envelope must be marked "Proposal for Construction of Sewage Treatment Plant Additions." All proposals must be made on the blank forms included in the contract documents. The name, address, and license number of the bidder shall be plainly marked thereon.

No proposal shall be considered or accepted by the City Council unless at the time of its filing the same be accompanied by a deposit with the City of Greensboro, of cash or a certified check on some bank or trust company insured by the Federal Deposit Insurance Corporation, in an amount equal to not less than five per cent (5%) of the proposal. In lieu of making the cash deposit as above provided, such bidder may file a bid bond executed by a corporate surety licensed under the laws of North Carolina to execute such bonds, conditioned that the surety will upon demand forthwith make payment to the City of Greensboro upon said bond, if the bidder fails to execute the contract in accordance with the bid bond, and upon failure to forthwith make payment, the surety shall pay to the City of Greensboro an amount equal to double the amount of said bid bond. This deposit shall be retained if the successful bidder fails to execute the contract within ten days after the award or fails to give satisfactory surety as required herein.

Consideration will be given only to proposals submitted by contractors licensed under the Contractor Licensing Act of 1925 or as amended.

Copies of the Contract Documents will be on file after April 6, 1959 and may be examined at the office of the consulting engineers, New York, N. Y., and at the office of the Director of Public Works, Municipal Building, Greensboro, N. C. at any time during regular business hours. They may also be examined at the office of the Associated General Contractors in Charlotte and Greensboro; and at the Dodge Plan Rooms in Greensboro and Atlanta, Georgia.
They may be obtained upon application to the Engineer or to the City.

A deposit of fifty dollars ($50.00) will be required for each set of Contract Documents taken. The deposit will be returned in full for each set, not to exceed three sets, returned by persons submitting bona fide bids. Twenty-five dollars ($25.00) will be refunded to those who return the Contract Documents in good condition within 30 days after the bid opening date.

The City reserves the right to reject any or all bids, to waive informalities, and to award contracts which in the opinion of the City appear to be in its best interest. The right is reserved to hold any or all proposals for a period of thirty (30) days from the date of opening thereof.

GEORGE H. ROACH, MAYOR
JAMES R. TOWNSEND, CITY MANAGER

Bids: April 14, 1959

Contract PN-560.010

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
BUILDINGS NOS. 263 AND 264
PLACING FILL

Sealed proposals for removing unsuitable material and placing fill at the sites of Buildings Nos. 263 and 264 at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 14, 1959, at which time said proposals will be opened and read in Room 1102.

Contract documents may be seen at the office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $20.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $20.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1091, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, April 2, 1959

Bids: April 14, 1959

Advertisement for Construction Bids for the Livonia Drain No. 1 in the City of Livonia, Wayne County, Michigan

1. RECEIPT OF BIDS

The Drainage Board for Livonia Drain No. 1 will receive sealed bids until 11:00 A.M., Eastern Standard Time, Tuesday, April 14, 1959, at the Board of Wayne County Auditor's Board Room No. 1222, City-County Building, Detroit, Michigan, at which time and place all bids will be publicly opened and read.

2. DESCRIPTION OF WORK

The principal quantities of work are as follows:

Section No. 1—405 lin. ft. Triple box; 7858 lin. ft. 13'-6" x 12'-6" box; 199 lin. ft. 36" sewer; 578 lin. ft. 30" sewer; 43 lin. ft. 24" C.M.P.; 1612 lin. ft. 15" sewer; 25 manholes; junction chambers; inlet structure, and 2260 lin. ft. 12" water main.

Section No. 2—2732 lin. ft. 8'-6"; 2729 lin. ft. 8'-0"; 6616 lin. ft. 5'-0"; 1597 lin. ft. 54"; 893 lin. ft. 36"; 310 lin. ft. 24" open cut sewers; 37 manholes; special sewer crossing and overflow chambers.

Section No. 3—2523 lin. ft. 12'-0"; 2662 lin. ft. 10'-6"; 2553 lin. ft. 10'0"; 1573 lin. ft. 7'-6"; 989 lin. ft. 7'-0"; 4050 lin. ft. 6'-6"; 933 lin. ft. 48"; 327 lin. ft. 42"; 286 lin. ft. 36"; 641 lin. ft. 30"; 147 lin. ft. 24"; 82 lin. ft. 21" open cut sewers; 54 lin. ft. 54"; 277 lin. ft. 48" tunnel sewers; 31 manholes, junction chambers, overflow chambers; inlet structures; special sewer and water main crossings and 1025 lin. ft. 12" water main.

Section No. 4—2730 lin. ft. 10'-6"; 3105 lin. ft. 10'-0"; 1211 lin. ft. 7'-6"; 2500 lin. ft. 7'-0"; 378 lin. ft. 48"; 356 lin. ft. 42"; 688 lin. ft. 27"; 42 lin. ft. 24"; 216 lin. ft. 21" open cut sewer; 147 lin. ft. 48" tunnel sewer; 29 manholes; siphon; junction chamber; special sewer crossings; water main crossing inlet and 190 lin. ft. 12" water main.

3. PLANS AND SPECIFICATIONS

Plans and specifications are on file and copies may be secured at the office of the Wayne County Drain Commissioner, 3523 Cadillac Tower, Detroit 26, Michigan. A deposit of Twenty-Five Dollars ($25.00), *Check only*, will be required on each set of plans, which will be refunded upon their return in good order within ten (10) days after the opening of bids.

4. BID BOND

A certified check or bank draft payable to the Drainage Board Livonia Drain #1, or a satisfactory bid bond executed by the bidder and a surety company, in an amount equal to Five Per Cent (5%) of the bid, shall be submitted with each bid. No bid may be withdrawn for at least One Hundred Fifty (150) days after the scheduled closing time for receiving bids.

5. AWARD OF CONTRACT

The Drainage Board reserves the right to reject any or all bids, to award the work by sections, and to waive any irregularities in bidding. The successful bidder will be required to furnish satisfactory performance, labor and material bonds, and insurance certificates.

HENRY V. HERRICK
Wayne County Drain Commissioner
Chairman, Drainage Board
Livonia Drain No. 1

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5171) will be received at Cody, Wyoming, until 10 a.m., Mountain Standard Time, April 28, 1959, for furnishing labor and materials for Boysen-Pilot Butte 115-Kilovolt Transmission Line, Transmission Division, Wyoming, Missouri River Basin Project, Location Fremont County, Wyoming. Principal items are 77,000 pounds—furnishing and erecting steel towers; 279 structures—furnishing and constructing wood-pole structures of various types and maximum pole lengths; 37.2 miles of line—furnishing and stringing three 477,000 circular-mil ACSR conductors; 37.28 miles of line—furnishing and stringing two 2-inch galvanized steel overhead ground wires; and other work. Completion time 240 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; P. O. Box 1189, Cody, Wyoming; or Building 53, Denver Federal Center, Denver 25, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: April 10, 1959.

Board of Education—Bureau of Construction
Notice Re: Prequalification Forms For Contractors

Approved As To Form
Acting Corp. Counsel

NOTICE IS HEREBY GIVEN THAT The Superintendent of School Buildings, Bureau of Construction, 4th Floor Room 407, 42-15 Crescent Street, Long Island City 1, N. Y., will receive applications for prequalification from contractors who may wish to submit bids for the proposed hereinafter specified contracts as follows:

General construction, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures.

Public School 155, Manhattan. East 117th Street, between First & Second Avenues.

Prequalification application forms will have to be secured from and must be submitted to the Superintendent of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York.

Bids when advertised, will be received from prequalified bidders only.

Time for submitting prequalification applications by contractors will expire on Friday, April 10, 1959.

WILLIAM H. CORREALE
Superintendent of School Buildings,
Design and Construction.
Dated: March 25, 1959
Starting Wednesday, April 1, 1959
Five (5) Days.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5763) will be received at Casper, Wyoming, until 10 a.m., Mountain Standard Time, May 5, 1959, for furnishing labor and materials for Kortes-Cheyenne 115-kv. Transmission Line, Transmission Division, Wyoming, Missouri River Basin Project. Location between existing Kortes Powerplant in Carbon County, Wyoming, and existing Cheyenne Substation in Laramie County near Cheyenne, Wyoming. Principal items are 1,100 structures—furnishing and constructing wood-pole structures of various types and maximum pole lengths; 70,000 lbs.—furnishing and erecting steel towers; 3,450 assemblies—furnishing, assembling and attaching to wood-pole structures insulator assemblies with various insulator units; 139.7 miles of line—furnishing and stringing three 556,500 circular mil ACSR conductors; 139.4 miles of line—furnishing and stringing two high strength galvanized-steel overhead groundwires, and other work. Completion time 510 days. For particulars, address Bureau of Reclamation, Building 46, Denver Federal Center, Denver 25, Colorado, P. O. Box 280 Casper, Wyoming, or Building 53, Denver Federal Center, Denver 25, Colorado. W. A. Dexheimer, Commissioner.

Contractors Watch This Section—

for new projects.

Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

OFFICIAL PROPOSALS

Bids: April 27, 1959.

Press Notice
Tender Notice for the Koyna Project Gates, Hoists, Stop-logs and Gantries

Sealed tenders are invited for supply of the following equipment in connection with the Koyna Project in the North Satara District of the Bombay State.

S. No.	ITEM	Earnest money Rs.
1.	Sluice Gates, Stoplogs and Hoisting equipment for Dam	8,000
2.	Penstocks Intake Gates, Stoplogs and Hoisting equipment for Dam	7,000
	Intake Gates, Hoists and Gantry for Head Race Tunnel Intake	13,000
4.	Trash racks with hoisting equipment for Head Race Tunnel Intake	3,000
5.	Bulkhead Gate and Hoisting Gantry for Surge Shaft	3,000
6.	Stoplogs and monorail for Turbine pits	1,000

Tenders (with schedule of prices with relevant covering letter) for each of these items to be submitted separately though under the same cover.

2. Tender forms, conditions and specifications of the contract and drawings for the above items can be purchased on payment of Rs. 15/- (Rs. one Hundred and Fifteen only) per set by Cash or Postal or Money Order, from the office of the undersigned on any working day upto and including 25th April 1959.

3. Each tender shall be accompanied by earnest money as specified in the above table. In the case of the successful tenderer this will be transferred to and augmented for balance of the amount by deduction from running bills so as to make up the security deposit at 2% of the accepted tender amount.

The successful tenderer will have to furnish in addition a performance guarantee from a Scheduled Bank or an Insurance Company approved by Government to the extent of 10% of the accepted tender amount for satisfactory performance of the contract.

4. The dates of deliveries being the most important part of the tender should be specifically mentioned against each item and parts thereof, if equipment is proposed to be supplied in parts such as embedded parts, gates and hoisting equipment.

5. Tenders will be received in the office of the undersigned upto 2.00 P.M. on 27th April 1959 and will be opened publicly at 4.00 P.M. on the same day.

6. Tenders for each of the items listed above shall be considered separately and decided on their merits. The tenderers, if they so desire, may quote a rebate in case more than one tender is awarded to them.

Right is reserved to reject any or all tenders without assigning any reasons therefor.

7. For more details please ask for a copy of instructions and notes for guidance of the tenderers "Gate, Hoists, Stop-logs and Gantries" which will be supplied free.

Dated: 27th January 1959.

CHIEF ENGINEER,
KOYNA PROJECT, KOYNA.
KOYNA DIST: North Satara.

Bids: April 9, 1959.

Notice to Contractors

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Public Building Law and Highway Law, sealed proposals will be received until 10:30 A.M., April 9, 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Bldg., Albany, New York for:

Contract B.P. 59-73 for
Beach Protection (Artificial Beach Nourishment) at Atlantic Beach
Town of Hempstead, Nassau County, New York

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor The Gov. Alfred E. Smith State Office Bldg., Albany, New York
(b) Department of Public Works, 270 Broadway, New York City, New York.
(c) In addition to the above mentioned offices, plans, maps and specifications for Contract B.P. 59-73 may be examined and obtained at the office of Mr. Milton E. Goul, 325 West Main St., Babylon, L.I., New York.

OFFICIAL PROPOSALS

The deposit for Plans and Proposal Forms for Contract B.P. 59-73 is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's Estimate of Cost for Contract B.P. 59-73 is $258,400.00.

Proposals for Contract B.P. 59-73 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the State of New York, Commissioner of Taxation and Finance for the sum of $15,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Public Building Law and to the Highway Law as set forth in "Instructions to Bidders" in the contract specifications.

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: April 9, 1959.

Notice to Contractors

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m., Eastern Standard Time on April 9, 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON INTERSTATE ROUTE 595, FIVE MILE POINT TO BROAD AVENUE, PROJECT I-IG-4127(6), ITEM 13B, BROOME COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. FA-SM-137.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.
(b) Mr. Joseph C. Federick, District Engineer, New York State Department of Public Works, 71 Frederick Street, Binghamton, New York.
(c) Mr. William M. Trainer, Associate Contract Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.

The Engineer's Estimate of cost for this work is $38,275.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the efivelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $2,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF
PUBLIC WORKS

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5172) will be received at Winters, California, until 10 a.m., Pacific Standard Time, April 30, 1959, for furnishing labor and materials for trash removal equipment for fish collecting facilities at Delta-Mendota Intake Canal, Central Valley Project, California. Location near Tracy, California. Principal items are 2,420 cu. yds. excavation; 1,840 cu. yds. compacted backfill; 160 cu. yds. concrete in structures; lump sum furnishing and installing trash removal equipment; and other work. Completion time 350 days. For particulars, address Bureau of Reclamation, P. O. Box 2511, Sacramento, California; or Building 53, Denver Federal Center, Denver 25, Colorado. W. A. Dexheimer, Commissioner.

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

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Position Wanted ads take 1/2 of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

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ADDRESS BOX NO. REPLIES TO: Box No. Classified Ads. Div. of this publication. Send to office nearest you:
NEW YORK 36, P. O. BOX 12
CHICAGO 11, 520 N. Michigan Ave.
SAN FRANCISCO 4, 68 Post St.

• POSITIONS VACANT

Field Engineer, Washington, D. C., and southeastern Pennsylvania area. Graduate engineer with some construction experience desired. Engineer will service ready mix and products plants in Virginia, Maryland, and southeastern Pennsylvania. Salary, expenses and car furnished. Home over all weekends. Excellent opportunity to learn cement business. Send full particulars with first letter. P-1250, Engineering News-Record.

Resident Engineer Wanted. Graduate engineer with experience in supervision of construction on water, sewerage, steam power and or building construction. Location generally midwest, but assignments may be to other areas of U. S. Established midwest consulting engineering firm. Reply in detail to P-1294, Engineering News-Record.

Construction Super. Schools, Hospitals, etc. Cost conscious, give experience, age data and salary expected. Central Illinois. P-1295, Engineering News-Record.

Business Manager—Controller for large building construction company in New York City, operating in several states. Executive caliber, experience with control systems, interdepartment & field office coordination, knowledge of government private & sub-contracts, cost projections, completion schedules, purchasing, etc. Strong administrator with good business judgment to see that systems function & to be responsible for results. Ability to plug up loopholes, develop efficiency standards & cost controls. Complete charge of personnel. Outstanding opportunity for the right man leading to a vice presidency. Salary commensurate to proven ability. Submit detailed resume, stating salary requirement & availability. P-1090, Engineering News-Record.

Wanted—Construction Superintendents: Long established midwest construction firm has opening for two or more qualified field construction superintendents. Engineering background preferred but not required. Applicants must be aggressive, cost-conscious and well grounded in reinforced concrete, structural steel and masonry structures. Complete education, experience data and salary expected should be furnished in first reply. P-1107, Engineering News-Record.

City Engineer—For City of 70,000 population located in southeastern Pennsylvania. Applicant must excel in sanitary engineering, and have knowledge of general municipal engineering problems. Applicant must qualify for Reg. in Penna. Furnish complete resume of education, experience and starting salary desired in first letter. Write P-1185, Engineering News-Record.

Streets Superintendent—requires 5 years experience in all-round street maintenance and cleaning operations; two years supervisory; age 30 through 50; written and oral exams given. Salary range: 192 to 600 with starting salary open. Write the Personnel Office, City Hall, City of Cedar Rapids, Iowa.

Draftsman-Estimator for growing Prestressed Concrete manufacturer on Central-South coast. Similar experience desirable but not essential. Architectural background with field experience desired. Good opportunity for man with initiative. Send resume to P-1168, Engineering News-Record.

Experienced Reinforcing Steel Detailer. Excellent starting salary and usual benefits. New office and Plant under construction. Our employees know of this advertisement. P-1080, Engineering News-Record.

• POSITIONS VACANT

Traffic Engineer—Immediate opportunity for a graduate Civil Engineer with three years' professional experience. Annual salary $7320-$8904. Address experience resume to Kern County Personnel Department, 3805 Chester Ave., Bakersfield, California.

Experienced Reinforcing Bar Detailer Wanted by established steel company in New York City. Permanent. Good starting salary and other benefits. In reply give experience and salary expected. Our employees know of this ad. P-1321, Engineering News-Record.

Experienced Sales Engineer. To sell reinforcing steel bars in New York Metropolitan Area for old established reinforcing steel fabricator, with office and plant in Metropolitan Area. Complete line of reinforcing steel products. Salary, expenses and bonus. Other benefits. Permanent. Reply giving complete details of past experience and education. Our employees know of this ad. P-1357, Engineering News-Record.

Superintendent—Water and Sewerage Department—wanted, with minimum of 3 years administrative experience in operating water system and or sewage disposal systems. Engineering training desirable. New Sewage Treatment Plant nearing completion. Salary range $5,658.00 to $7,458.00. Send resume of experience and application to H. R. Vasey, City Manager, City Hall, Mankato, Minnesota.

Civil Engineer—Registered Professional Engineer with experience in municipal street and sewer design. Beginning annual salary approximately $7075.00 with increase at the end of the first six months. Annual $97 increase each year for next three years to final salary after three and one half years of approximately $8440. Normal fringe benefits. Submit resume and references to Director of Public Service, City of Middletown, Ohio, P. O. Box 550.

Mechanical & Electrical Engineers—Wanted by progressive Paper Mill located in northern half of the lower penninsula of Michigan. Please furnish resume stating education, experience and salary requirements. P-1324, Engineering News-Record.

Young Man, at least 2 yrs. college engineering, ability to use transit and read prints. Willing to work hard in mud and dust. Must be able to take command. Understudy to foremen, sewer, water and road work. Work in Dayton, Ohio area. Write P-1365, Engineering News-Record, stating full particulars.

Bridge Design engineer, experienced in designing steel and concrete bridge structures, Tennessee. Give resume, education, experience, reference and salary expected. All replies confidential. P-1363, Engineering News-Record.

Engineers experienced in building construction wanted by long established central Illinois builder who has openings for two quantity survey engineers and one cost engineer. Salary commensurate with ability. Complete education, experience data and salary expected should be furnished in first reply. P-1316, Engineering News-Record.

Estimator—At least five (5) years experience estimating institutional, commercial and industrial construction under our Chief Estimator in Ohio-Michigan area. Graduate Engineer preferred but not necessary. Salary commensurate with experience. Good opportunity for right man. P-1320, Engineering News-Record.

Construction Superintendent, C.E., Puerto Rico. Must be experienced General Construction, Public Works. Send resume stating age, education, experience, references & salary desired. P-1369, Engineering News-Record.

• POSITIONS VACANT

Construction Superintendent, C.E., Maine. Must be experienced General Construction, Public Works. Send resume stating age, education, experience, references & salary desired. P-1367, Engineering News-Record.

Designing Engineer—In charge of designing office to review and approve designs by consulting firms. Required experience 10 years responsible charge of civil engineering design in hydraulics earth dams water supply structures and equipment, specifications. Prof. Eng. Lic. Department to Conservation and Economic Development, State of New Jersey, 219 West State Street, Trenton, N. J.

Assistant Designing Engineers—To review and approve designs of consulting firms. Required experience, six years responsible civil engineering design in hydraulics earth dam water supply structures and equipment specifications. Prof. Eng. Lic. Department of Conservation and Economic Development, State of New Jersey, 219 West State Street, Trenton, N. J.

Senior Engineers—Required experience four years civil engineering design in hydraulics water supply structures, preparations of drawings and estimates. Department of Conservation and Economic Development, State of New Jersey, 219 West Street, Trenton, N. J.

Young Engineers wanted for the development of water resources in the West by The Bureau of Reclamation which plans, designs, and builds engineering works to supply irrigation water to farms in the 17 western-most states. Many huge irrigation projects have been authorized by Congress and are now underway. Starting salaries of $4,190, $5,130, and $6,285/a year. Every type of civil engineering, electrical and mechanical engineering is encountered in the Bureau's design and construction work. Details given in civil service announcement, No. 10-1-1-599 available from many post offices throughout the country or from the United States Civil Service Commission, Washington 25, D. C.

(Continued on page 92)

To EMPLOYERS Who Advertise for MEN:

Frequently, when there are many applicants for a position, only the most promising letters are acknowledged. The other applicants never know whether their letters reached a prospective employer or not. These men often become discouraged, will not respond to future advertisements and even question their bona fide character.

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You can help keep our readers interested and get better returns to your advertising in this section if you acknowledge each reply—in plain envelopes, if you wish.

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DISTRICT SALES REPRESENTATIVE

Rapidly expanding drilling equipment manufacturer needs district representatives for New York, Philadelphia, Atlanta, Birmingham, Chicago and Detroit.

Must be graduate civil or soils engineer, now traveling extensively, with experience in soils mechanics, automotive and construction equipment, to manage sales and call on civil service offices, engineers, laboratories, and contractors.

Opportunity for advancement to top management.

P-1306, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

SUPERINTENDENT
FOR
BUILDING CONSTRUCTION DIVISION

The man we are looking for has had substantial background of successful experience as superintendent on varied multi-million-dollar competitively bid industrial and governmental building construction projects for general contractors. He is ready to assume full responsibility immediately as superintendent on a highly complex and speedy project involving supervision of concrete work and coordination of mechanical, electrical, and other sub-contract work in the $10 to $15 million range in the West.

We have an exceptional opportunity to offer this man now and for the future. Presently operating on a nation-wide basis and expanding our operations substantially, we can offer a top flight, aggressive and hard working superintendent an excellent opportunity in this expansion program and an opportunity to grow with a growing company.

Write full details covering experience, training, education, personal data, references, and salary requirements.

P-1202, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

CIVIL ENGINEER—MANAGER

Small general engineering and surveying organization wishes to hear from mature graduate with ability to assume complete charge of activities for long standing clientele in specialized field.

Expansion potential, to double present capacity, excellent for engineer interested in partnership accrual through successful management or direct purchase.

Pennsylvania Registration required.

FS-1301, Engineering News-Record
Class Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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Having opening for experienced and well qualified Purchasing Agent in office of leading Southern California Building Contractor. Must be graduate Engineer and competent at placing subcontracts.

Send Resume

F. E. YOUNG CONSTRUCTION CO.
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Need Engineers?

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EMPLOYMENT OPPORTUNITIES Section

ENGINEERS

OVERSEAS

DAM ENGINEER on MULTI-PURPOSE DAM PROJECT in THAILAND

Require qualified engineer with responsible construction experience in placement of reinforcing steel, mass concrete pours, mass concrete cooling on large dams or other mass concrete projects. Degree preferred but not essential. Must pass physical examination and security investigation.

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c/o SVERDRUP & PARCEL, INC.
915 Olive Street, St. Louis 1, Mo.

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Mail Resume to Personnel Department

MICHAEL BAKER, JR., INC.
CONSULTING ENGINEERS

Baker Building
Rochester, Pennsylvania
or
Northside Station, Box 9997
Jackson 6, Mississippi

CHIEF SOILS ENGINEER
SENIOR BRIDGE CONSTRUCTION ENGINEER

Two experienced senior engineers needed to complete technical party for highway and bridge construction project in South Vietnam. High degree of initiative, judgment, and skill in handling human relations required in addition to professional competence. 18 month minimum employment agreement. Only those interested in difficult and challenging work shall apply.

Soils Engineer: graduate degree in soils is mandatory. Experience desirable in soil testing, stability analyses, pavement design, and bridge foundation investigations. Some knowledge of materials testing helpful. Dependents may accompany.

Bridge Construction Engineer: Minimum 20 years experience in this highly responsible position, including deep water foundations and steel erection. Travel in single status preferred.

CAPITOL ENGINEERING CORPORATION
Consulting Engineers
Dillsburg, Pennsylvania

Estimators

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IN THE WEST LOS ANGELES AREA

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Industrial Piping Estimators
Chief Engineer & Chief Estimator

Contact F. KITCHENER or B. L. HAVILAND
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Los Angeles 25, California
GRanite 9-3775

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P-1307, Engineering News-Record
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(Continued from page 90)

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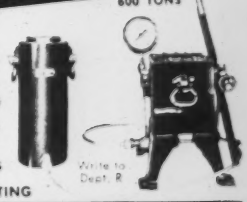

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A Villa and a Skyscraper

BUSY TIMES LIE AHEAD for France's Minister of Cultural Affairs, Andre Malraux. Within a matter of days, he has promised to save from the wreckers' tools Corbusier's pioneer "machine for living" house, Villa Savoye, built in 1920 in a suburb of Paris, and he has given his stamp of approval to a proposal for a 52-story skyscraper in the Montparnasse section of Paris.

Both actions head him into the stormy waters of architectural controversy. While his promise on the villa has stemmed one torrent of protest—at least temporarily—he is certain to release another by his decision on the skyscraper. It will be interesting to witness the outcome since similar controversies have sometimes flared on this side of the Atlantic.

Over the years we have pretty well solved the skyscraper problem in the United States by admitting that economics rather than emotions should be the deciding factor. That will no doubt be the case in Paris, but in the meantime the battle of artistic merit must be waged.

Parisians are fiercely proud of their relatively low and uniform skyline. That it is pierced by the 984-ft Eiffel Tower is a fact that is grudgingly accepted after 70 years of sporadic attempts to have it dismantled in accordance with the promise made when it was erected for the 1889 World's Fair. For an office building to be proposed now to thrust its head 500 ft above its surroundings will be unthinkable to many. A cry to man the barricades is certain to ensue.

That Paris could use some modern office buildings has long been recognized. That the rundown Montparnasse section needs a vast redevelopment program is also accepted. But that the solution is a building as high as 52 stories is something else again. After the emotional outbursts—and the abuse of M. Malraux—have run their course, economics can come to the fore. Such factors as the rent that can be charged and the effect on the subway and bus systems that must serve the building will bulk large in settling the question of how many stories are justified.

Saving buildings that are considered to be architectural treasures is also more a product of economics than emotions; government or some philanthropist must come forward to foot the bill. A case in point is Frank Lloyd Wright's Robie House of 1909 in Chicago, which was bought last year by William Zeckendorf, New York real estate man, to save it from destruction.

Corbusier's villa is, without question, a famous milestone in residence development. Box-shaped, it is raised on stilts and its walls are pierced with continuous windows to admit a maximum of sunlight, while ramps lead up to a sundeck on the roof. Unfortunately it is located 17 miles out in the country, where only devoted pilgrims would see it. Now used as a barn, it is estimated that it would cost $80,000 to rehabilitate it in its present location and a great deal more to move it to a more easily accessible site. An alternative is to preserve it in a fine book of photographs and drawings, from which everyone could profit, but such practical solutions are not satisfactory to sentimentalists.

M. Corbusier himself made the most realistic comment when he said, "Houses can die as well as men, but if there is some way of saving them, so much the better."

In attempting to solve his twin problems of saving the villa and promoting the skyscraper, France's Minister of Cultural Affairs will be treading paths upon which others, in many parts of the world have stumbled. How he fares in the necessary balancing of emotions and economics will, therefore, be watched intently for any new clues to success.

Indispensable Foreign Aid

EXPENSIVE AS IT IS, foreign aid is indispensable to our national security. Congress knows this, and eventually votes the necessary money, but in the meantime wrings every possible ounce of political capital out of the debate over the requested funds.

Nothing apparently can be done about this time-wasting, irresponsible activity except to reduce the number of charges that can be leveled with a straight face against the foreign aid program. One of these charges is that the program is wasteful because of inefficiency in carrying out the projects in the field. And since it is here that the construction industry plays its part in the program, reduction of waste and inefficiency is an objective to be sought with the greatest diligence.

The first reaction of responsible construction people working overseas to a charge of inefficiency will be that they are already doing their best under difficult conditions. No doubt this may seem to be true, but the gravity of the situation warrants an examination of whether "best" is as good as possible.

All signs point to the necessity for continuing foreign aid indefinitely to assure ourselves of militarily strong allies and to counter Russia's economic penetration into countries important to our own security. The cost may be a bargain for what we get, but it is nevertheless a heavy burden on the American taxpayer, and should be made no heavier by waste.

There are other ways to improve the foreign aid program—by eliminating aid to countries who do not contribute to our security, by insisting that our private capital be permitted to invest in countries needing help where this is possible and by tighter administration at the top. But the place where the construction industry can help is in making savings in the field. No effort should be spared to discharge this responsibility creditably.

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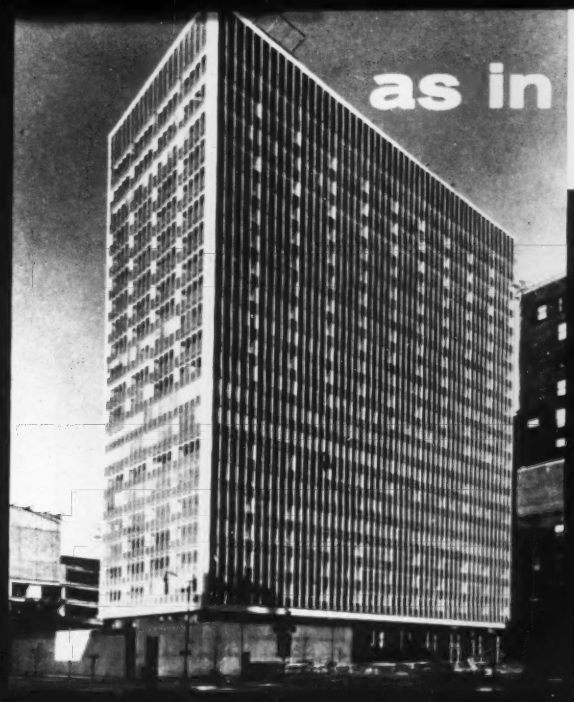

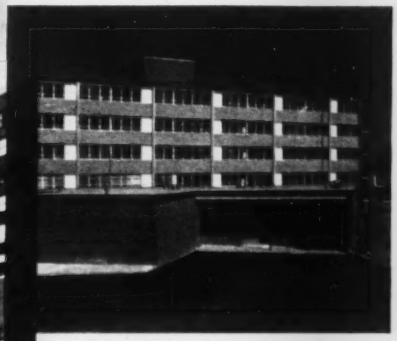

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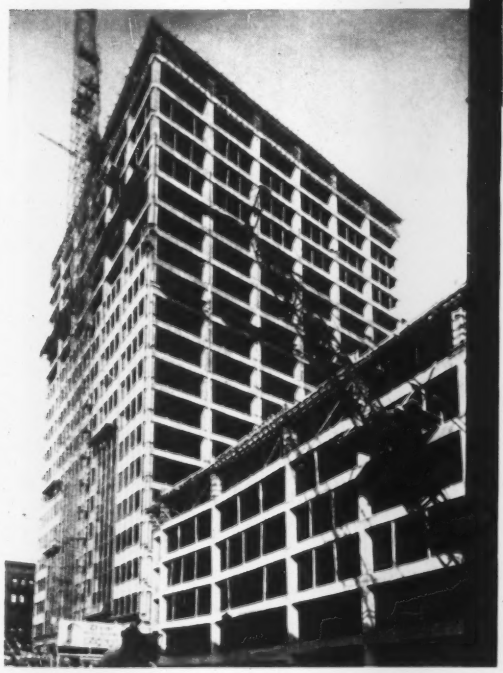

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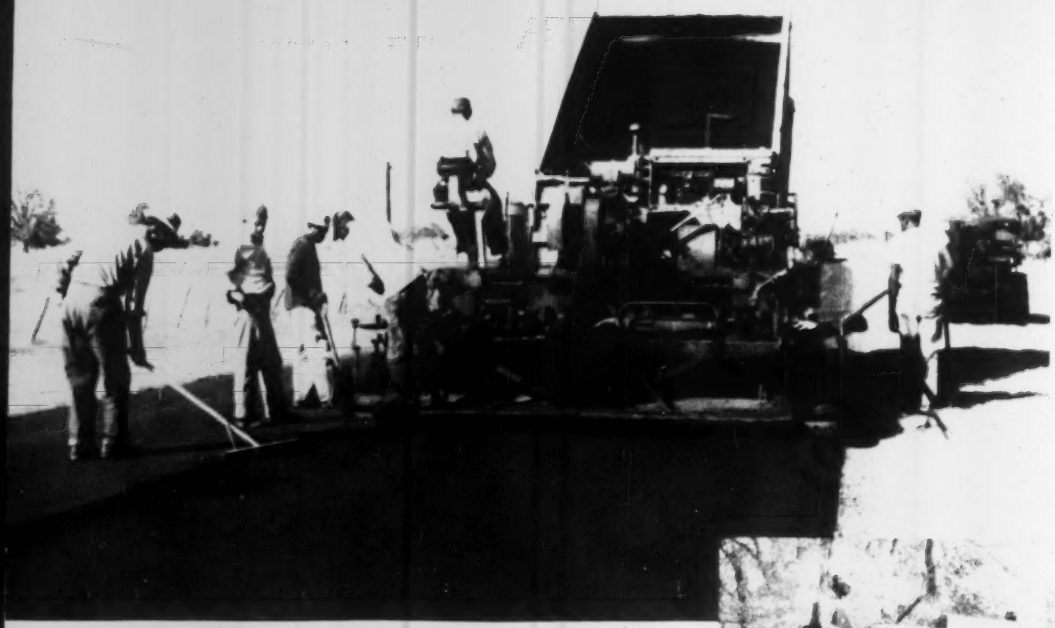
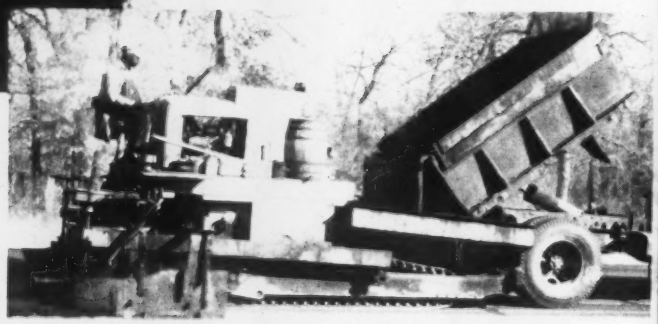


US Route 75 in Texas received hot-mix Texaco Asphaltic Concrete overlay, constructed by the Gulf Bitulithic Company.

Another section of US 75, which was given a Texaco Asphaltic Concrete overlay by the Public Construction Company.



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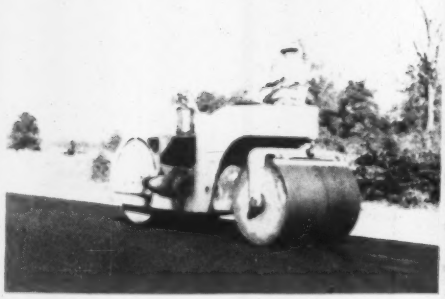

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